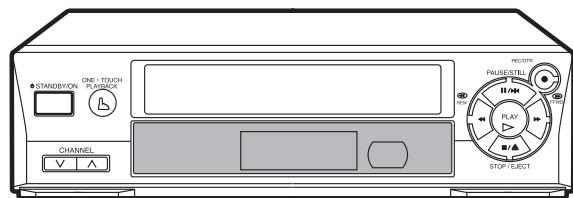




HV-FX970 HV-GX910

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SERVICE MANUAL

VIDEO CASSETTE RECORDER

BASIC TAPE MECHANISM : D-33

This Service Manual is the "Revision Publishing" and replaces "Simple Manual"
(S/M Code No. 09-996-332-6T1).

aiwa
S/M Code No. 09-996-332-6R1

REVISION
DATA

TABLE OF CONTENTS

SPECIFICATIONS	3	17. Opener Lid	56
ACCESSORIES LIST	3	18. Arm Assembly T/up	56
DISASSEMBLY INSTRUCTIONS	4	19. Arm Assembly Pinch	56
SERVICE POSITION	5	20. Belt Capstan/Motor Capstan	57
VCR TEST TAPE INTERCHANGEABILITY TABLE	6	21. Clutch Assembly D33	57
ELECTRICAL MAIN PARTS LIST	7 ~ 8	22. Lever F/R	57
WIRE HARNESS DIAGRAM	9	23. Gear Assembly H-UP/D or Gear Assembly UP/D	57
BLOCK DIAGRAM	10 ~ 18	24. Bracket Assembly Jog	58
SCHEMATIC DIAGRAM		25. Guide Rack F/L, Gear Rack F/L	58
1. POWER SECTION.....	19 ~ 20	26. Brake Assembly Capstan	58
2. AUDIO/VIDEO SECTION	21 ~ 22	27. Gear Drive/Gear Cam/Gear Connector	59
3. SYSTEM CONTROL/SERVO/OSD SECTION) ..	25 ~ 26	28. Bracket Assembly L/D motor	59
4. SCART SECTION	27 ~ 28	29. Gear Sector	60
5. TUNER/IF SECTION	29	30. Base Tension/Plate Slider/Lever Tension	60
6. FRONT 1 C.B	30	31. Gear Assembly P3/Gear Assembly P2	61
WAVEFORM		32. Base Assembly P3/Base Assembly P2	61
1. VIDEO SECTION	23	33. Arm Assembly Idler Jog or Arm Assembly Idler	61
2. SERVO/OSD SECTION	24	DECK MECHANISM ADJUSTMENT	
3. TUNER/IF SECTION	30	Tools and Fixtures for service	62
TRANSISTOR ILLUSTRATION	24	1. Mechanism Alignment Position Check	63
WIRING		2. Preparation for Adjustment	64
1. MAIN C.B SECTION	31~ 32	3. Checking Torque	64
2. FRONT 1 C.B SECTION	33	4. Guide Roller Height Adjustment	65
3. FRONT 2 C.B SECTION	33	4-1. Preliminary Adjustment	65
IC DESCRIPTION	34 ~ 39	4-2. Precise Adjustment	65
ADJUSTMENT	40 ~ 41	5. Audio/Control (A/C) Head Adjustment	66
MECHANICAL EXPLODED VIEW 1/1	42	5-1. Preliminary Adjustment	66
MECHANICAL PARTS LIST 1/1	43	5-2. Confirm that the Tape passes smoothly between the Take-up Guide and Pinch Roller	67
MECHANISM EXPLODED VIEW 1/3, 2/3, 3/3	44,46,48	5-3. Precise Adjustment (Azimuth Adjustment)	67
MECHANISM PARTS LIST 1/3, 2/3, 3/3	45,47,49	6. X-Value Adjustment	67
DECK MECHANISM PARTS LOCATIONS		7. Adjustment after Replacing Drum Assembly (Video Heads)	68
Top View	50	8. Check the Tape Travel after Reassembling Deck Mechanism	68
Bottom View	50	8-1. Checking Audio and RF Locking Time during Playback and after CUE or REV	68
DECK MECHANISM DISASSEMBLY		8-2. Check for Tape Curling or Jamming	68
1. Drum Assembly	51	MAINTENANCE/INSPECTION PROCEDURE	
2. Plate Assembly Top	53	1. Check before starting Repairs	69
3. Holder Assembly CST	53	2. Required Maintenance	70
4. Guide CST	53	3. Scheduled Maintenance	70
5. Bracket Side (L)/Bracket Assembly Door	53	4. Supplies Required for Inspection and Maintenance	70
6. Arm Assembly F/L	53	5. Maintenance Procedure	70
7. Lever Assembly S/W	53	5-1. Cleaning	70
8. Arm Assembly Cleaner	54	5-2. Greasing	71
9. Head F/E	54	MECHANISM TROUBLESHOOTING GUIDE	
10. Base Assembly A/C Head	54	1. Deck Mechanism	72
11. Brake Assembly S	55	2. Front Loading Mechanism	75
12. Brake Assembly T	55		
13. Arm Assembly Tension	55		
14. Reel S & Reel T	55		
15. Support CST	56		
16. Base Assembly P4	56		

SPECIFICATIONS

Video recording system	Rotary 2 head helical scanning system	Rewind time:	Approx. 3 min. with E-180 tspe
Video head		Channel coverage	VHF-low: C02 to C04, C13 to C20 (SECAM), S01 to S07
[HV-FX970LE]	Double azimuth 4 heads		VHF-high: C05 to C12, S08 to S41
[HV-GX910LE]	Double azimuth 2 heads		UHF: C21 to C71
Tuner system	Frequency synthesized tuner	Video input	0.5 - 2.0 Vp-p, 75 ohm, unbalanced
TV system	B/G, L SECAM, B/G PAL	Video output	1.0 Vp-p, 75 ohm, unbalanced
Video signal system	SECAM/MESECAM/PAL color signal, 625 lines, 50 fields	Horizontal resolution	240 lines
Usable cassettes	VHS video cassettes	Video S/N	43 dB (SP)
Recording/playback time	PAL/SECAM/MESECAM	Audio track	1 track (Mono)
	SP: 4 hours 20 minutes max. with E-260 tape.	Audio input	SCART: -8 dBs, 22 k ohm
	LP: 8 hours 40 minutes max. with E-260 tape [HV-FX970LE]	Audio output	SCART: -8 dBs, less than 2.2 k ohm
	NTSC (Playback only)	Operating temperature:	5 °C to 40 °C
	SP: 3 hours max. with T-180 tape	Power requirements	200 - 240 V AC, 50 Hz
	LP: 6 hours max. with T-180 tape [HV-FX970LE]	Power consumption	18 watts
	EP: 9 hours max. with T-180 tape [HV-FX970LE]	Dimensions	TYPE 3.5 watts (power save mode.)
Tape speed	PAL/SECAM/MESECAM	Weight	360 (W) x 278 (D) x 95 (H) mm (14 ¹ / ₄ x 11 x 3 ³ / ₄ in.)
	SP: 23.39 mm/sec.		Approx. 3.3 kg (7.26 lbs.)
	LP: 11.69 mm/sec. [HV-FX970LE]		
	NTSC (Playback only)		
	SP: 33.35 mm/sec.		
	LP: 16.67 mm/sec. [HV-FX970LE]		
	EP: 11.12 mm/sec. [HV-FX970LE]		

• Design and specifications are subject to change without notice.

ACCESSORIES LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S8-35R-P00-34B		INSTRUCTION ASSY 3FA1/NFA3<970>
1	S8-35R-P00-36A		INSTRUCTION ASSY<910>
2	S7-11R-1P0-16A		REMOTE CONTROLLER ASSY<970>
2	S7-11R-1P0-16B		REMOTE CONTROLLER ASSY<910>
3	S8-610-45F-000		CABLE, COAXIAL 1.2M/M
4	S8-615-05B-000		CABLE SET ASSY

DISASSEMBLY INSTRUCTIONS

1. Top Case Removal

1) Remove 4 screws holding the top case.

2. Panel Front Removal (see Fig. 1)

1) Release 7 tabs, and then remove the panel front.

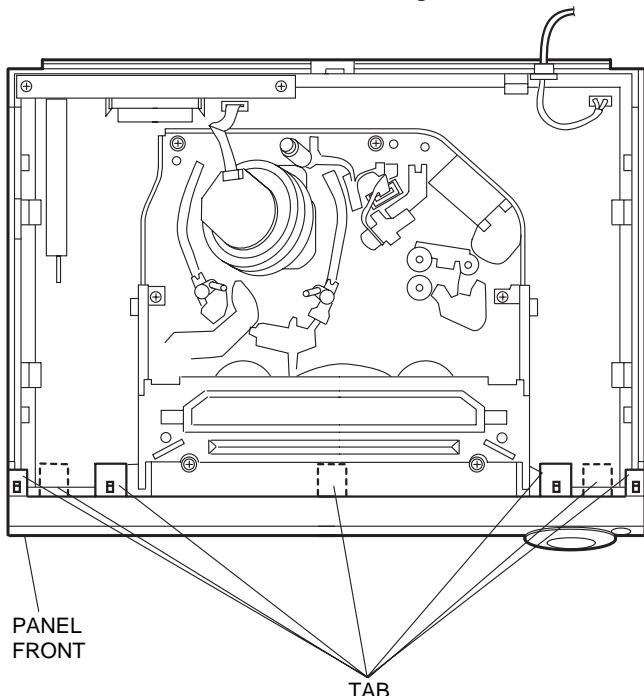


Fig. 1

4. Mechanism Removal (see Fig. 3)

- 1) Disconnect the drum FF cable from the connector (PMD01) on the Main C.B.
- 2) Disconnect the ACE head FF cable from the connector (P3D02) on the Main C.B.
- 3) Remove 6 screws (A).

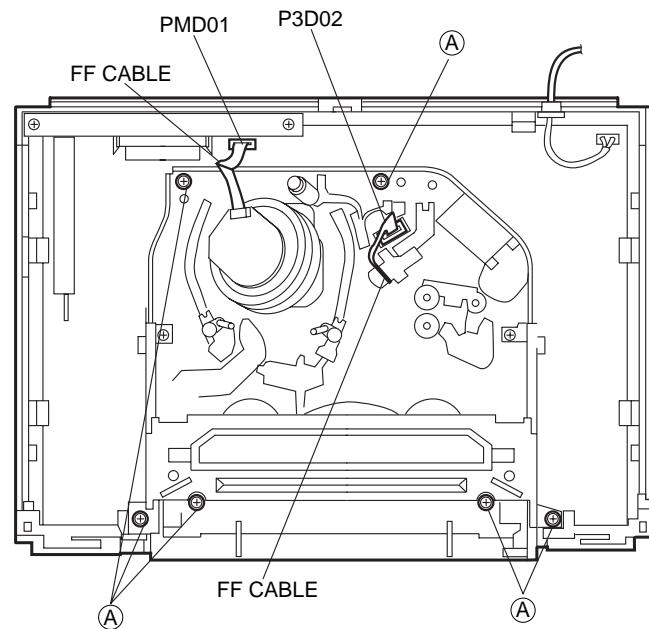


Fig. 3

3. Front-1 C.B. and Front-2 C.B. Removal (see Fig. 2)

- 1) Release 2 tabs, and then remove front-1 C.B. from the connector (PKM02) in the direction of arrow (1).
- 2) Release the tab, and then remove front-2 C.B. from the connector (PKM01) in the direction of arrow (2).

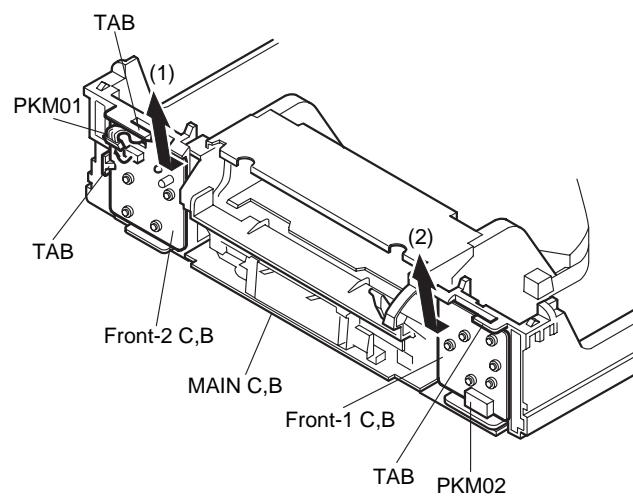


Fig. 2

5. Main C.B. Removal (see Fig. 4)

- 1) Remove 2 SCREWS B holding the panel assy, distri-butor.
- 2) Release 5 tabs, and then simultaneously lift the panel assembly, distributor and Main C.B. to remove them.

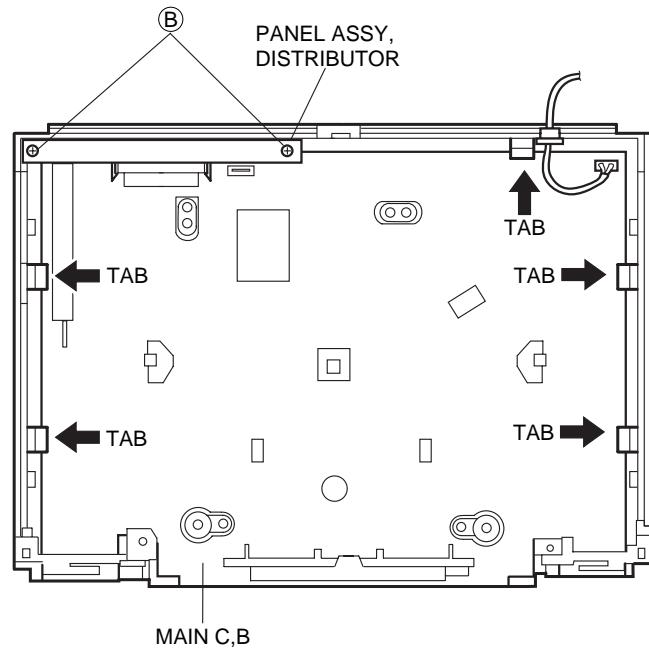
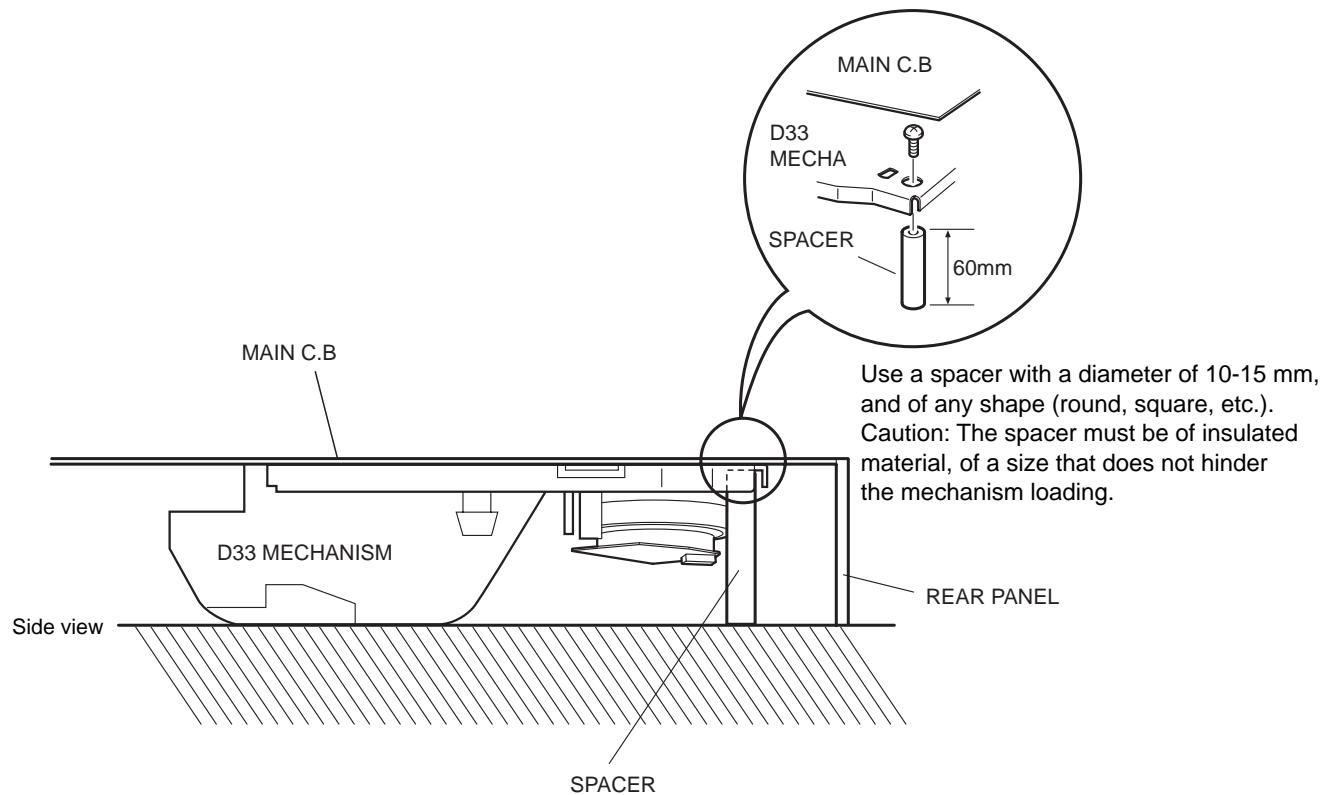


Fig. 4

SERVICE POSITION

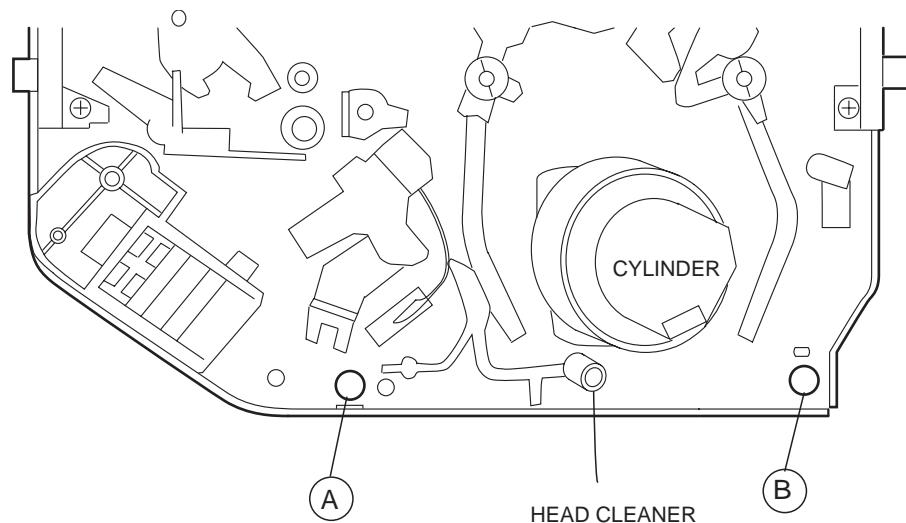
To set the mechanism to the service position in active status:

Insert a spacer as shown below: The service position can be set in the stable status without any defective contact.



Location

Install spacers at locations (A) and (B).



D33 Mechanism Top View

VCR TEST TAPE INTERCHANGEABILITY TABLE

There are two types of the new alignment tape CH-1B (for NTSC) and CH-2 (for PAL). On each tape four signals (1)-(4) are recorded for the times and in the order shown below.

(1) : 8min. → (2) : 2min. → (3) : 5min. → (4) : 5min.

The TTV-MP1 (for M-PAL), TTV-MS1 (for MESECAM) and TTV-S1 (for SECAM) alignment tapes have the same contents as the previous tapes.

Method	Now in use TYPE		New TYPE		Application
	Model	Contents *1	Model	Contents *1	
NTSC	TTV-N1	NTSC, Color bar, 1 kHz, SP	CH-1B(2)	NTSC, Stairsteps, 1 kHz, SP	PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-NS1	NTSC, Color bar, 1 kHz, SP	No Changed.		For S-VHS (SQPB) check
	TTV-N1E	NTSC, Color bar, 1 kHz, EP	CH-1B(4) *2	NTSC, Color bar, 1 kHz, EP	Switching position ADJ.
	TTV-NS6E	NTSC, Color bar, No sound, EP	No Changed.		For S-VHS (SQPB) check
	TTV-N2	NTSC, Stairsteps, 7 kHz, SP	CH-1B(1)	NTSC, Stairsteps, 7 kHz, SP	Head ACE Azimuth ADJ.
	TTV-N12 (SCV-1998)	NTSC, Color bar, 1 kHz, SP	CH-1B(4)	NTSC, Color bar, 1 kHz, EP	FM Envelope ADJ. X-Value ADJ.
	TTV-N6 (TTV-N06T)	NTSC, Mono scope, 7 kHz, SP	No Changed.		For total picture quality check (resolution, etc)
	TTV-N7A	NTSC, Stairsteps, 1 kHz, SP, HiFi 400 Hz	CH-1B(3)	NTSC, Color bar, No sound SP, HiFi 400 Hz	HiFi Audio PB Level ADJ.
PAL	TTV-P1	PAL, Color bar, 1 kHz, SP	CH-2 (2) * 3	PAL, Stairsteps, 1 kHz, SP	Switching position ADJ. PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-P1L	PAL, Color bar, 1 kHz, LP	CH-2 (4)	PAL, Color bar, 1 kHz, LP	Switching position. (LP Model) FM Envelope ADJ. (LP Model) X-Value ADJ. (LP Model)
	TTV-P2	PAL, Stairsteps, 6 kHz, SP	CH-2 (1)	PAL, Stairsteps, 6 kHz, SP	HEAD ACE Azimuth ADJ. FM Envelope ADJ. (SP Model) X-Value ADJ. (SP Model)
	TTV-P6 (TTV-N06T)	PAL, Monoscope, 6 kHz, SP	No Changed.		For total picture quality check (resolution, etc)
	TTV-P7	PAL, Stairsteps, 1 kHz, SP, HiFi 1 kHz	CH-2 (3)	PAL, Color bar, No sound SP, HiFi 400 Hz	HiFi Audio PB Level ADJ.
	TTV-P16	PAL, Color bar, 400 Hz, SP, HiFi 1 kHz	No Changed.		FM Filter ADJ.

* 1. Described in the order of color format, video signal, linear audio, tape speed and Hi-Fi audio.

* 2. Use CH-1B (1)-(3) with models used exclusively in the SP mode.

* 3. Use CH-2 (3) and (4) when it is necessary to observe the chroma signal.

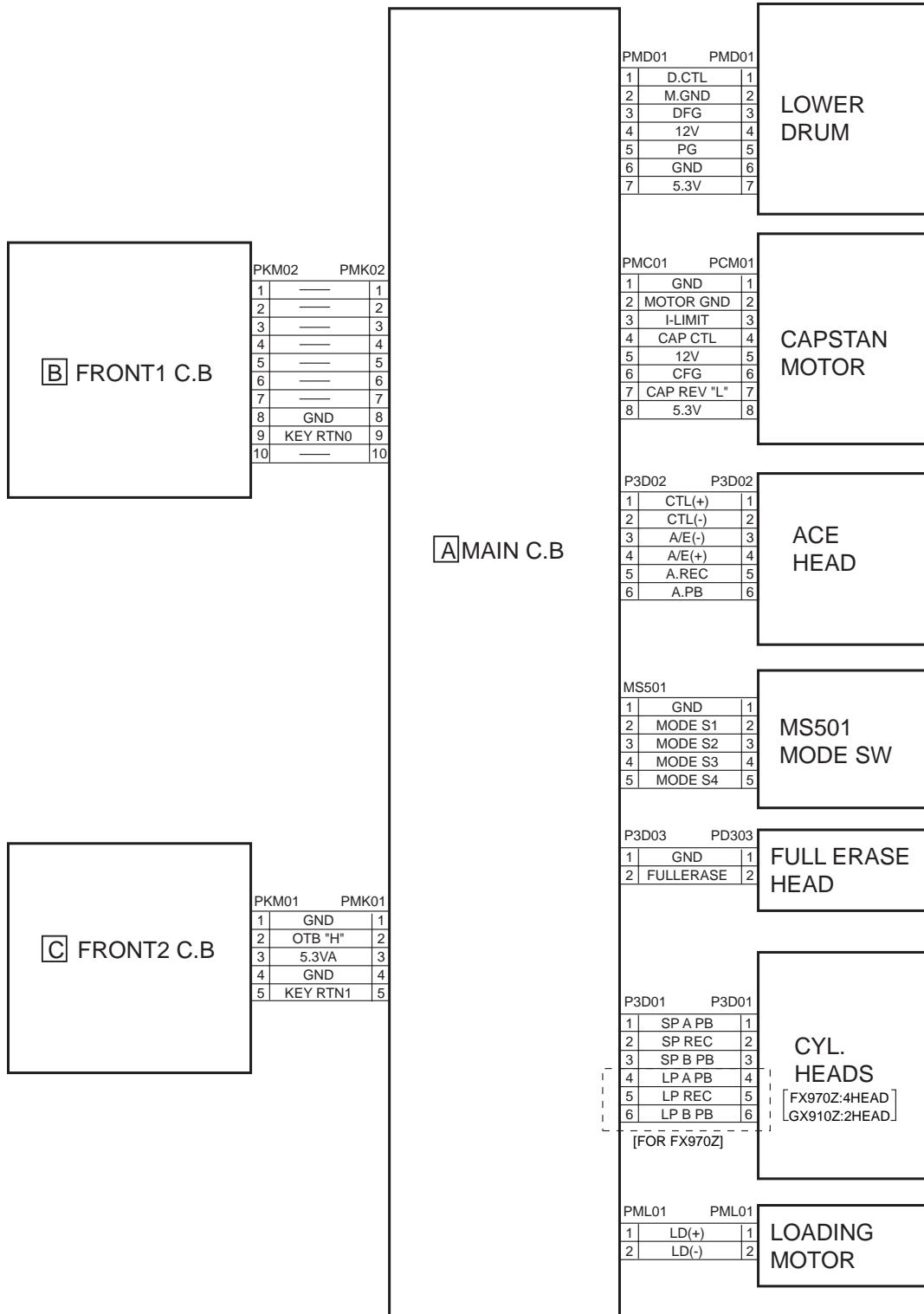
ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

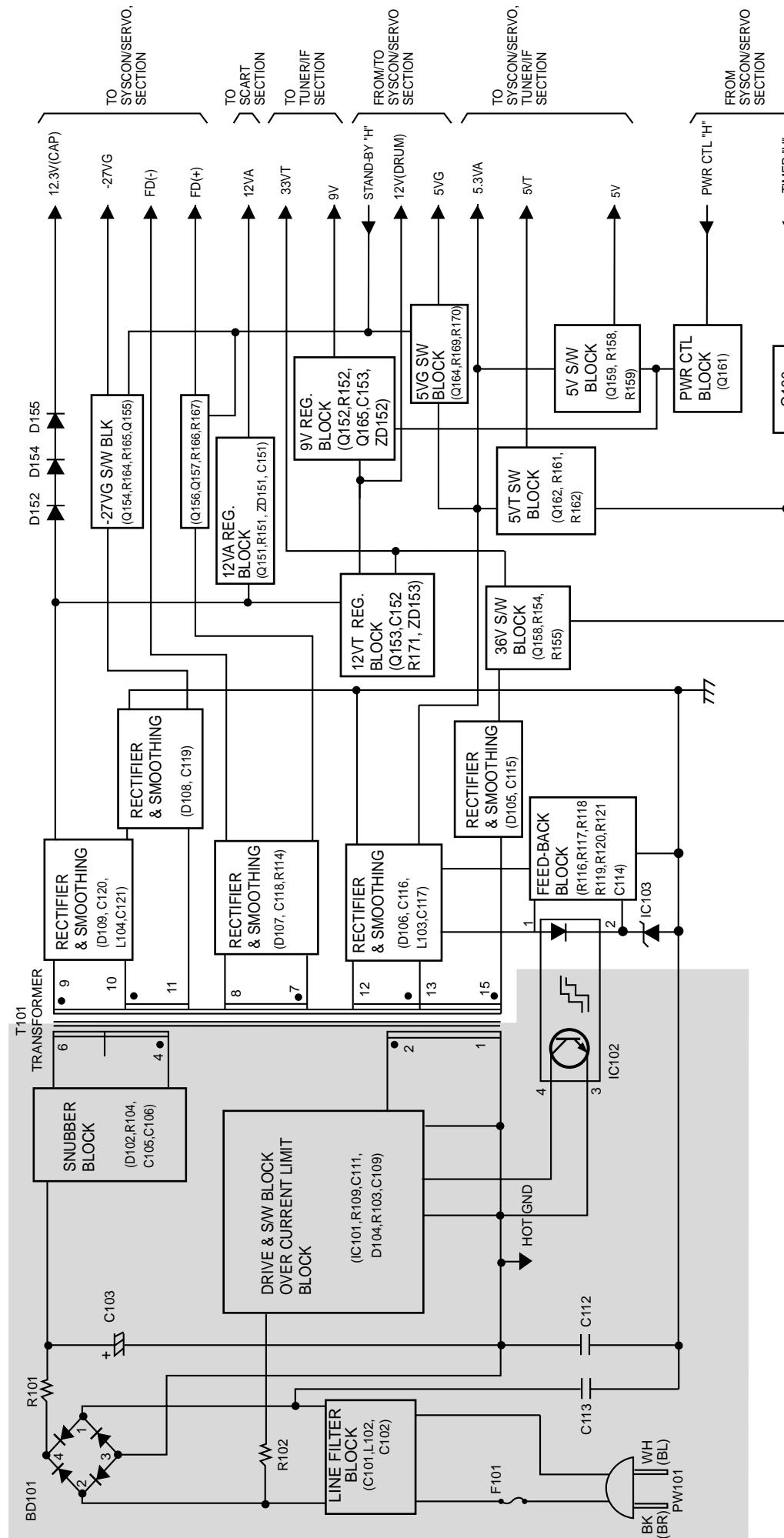
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C301	87-010-544-010	CAP, E 0.1-50V<970>	
△	SI-SK6-153-00A	IC,STR-G6153T 5P		C302	87-010-544-010	CAP, E 0.1-50V<970>	
	S6-570-62B-000	SENSOR PC123Y		C303	87-015-695-080	CAP, E 1.0M-50V	
	SI-KE4-310-00A	IC,KIA431 3P		C304	87-016-088-040	CAP, E 220-6.3V	
	SI-T01-238-00A	IC,TA1238N		C305	87-010-544-010	CAP, E 0.1-50V	
	SI-SA7-159-10A	IC,LA71591M		C310	87-015-698-080	CAP, E 4.7-50V<970>	
	SI-GS3-977-57B	IC,GMS3977RAA57F		C310	87-015-681-080	CAP, E 10-16V<910>	
	SI-H13-977-17A	IC,HD3977RC17F		C314	87-010-544-010	CAP, E 0.1-50V	
	SI-SS3-082-00A	IC,KA3082		C315	87-015-681-080	CAP, E 10-16V	
	SI-AL2-416-00B	IC,AT24C16-10PC		C316	87-015-681-080	CAP, E 10-16V	
	SI-KE7-031-00A	IC,KIA7031P		C318	87-010-402-040	CAP, E 2.2-50V	
	SI-KE7-042-00B	IC,KIA7042P		C319	87-010-544-010	CAP, E 0.1-50V	
	87-A20-281-010	IC,MN12510		C320	SC-N10-50K-948	CAP,1UF-50V	
	SI-RH7-635-00A	IC,BH7635S<970>		C322	87-010-078-080	CAP, E 47M-6.3V	
				C323	87-010-078-080	CAP, E 47M-6.3V	
TRANSISTOR				C324	87-010-544-010	CAP, E 0.1-50V	
	ST-R32-030-9AA	TR,KTC3203-Y		C325	SC-N10-50K-948	CAP,1UF-50V	
	S7-A30-293-010	TR,KTC2804-Y		C326	87-015-681-080	CAP, E 10-16V	
	ST-R31-980-9AC	TR,KTC3198-TP-BL		C327	SC-N10-50K-948	CAP,1UF-50V	
	S3-1KR-A10-3M0	TR,KRA103M-TP		C331	87-016-088-040	CAP, E 220-6.3V	
	ST-R12-680-9BA	TR,KTA1268-BL		C334	87-016-088-040	CAP, E 220-6.3V	
	ST-R12-730-9AA	TR,KTA1273-TP-Y		C335	87-010-544-010	CAP, E 0.1-50V	
	SK-RC1-01M-000	TR,KRC101M		C337	87-015-698-080	CAP, E 4.7-50V	
	ST-R31-990-9AF	TR,KTC3199-BL		C339	87-015-698-080	CAP, E 4.7-50V	
	ST-R12-670-9AC	TR,KTA1267-GR		C346	87-016-088-040	CAP, E 220-6.3V	
	ST-R10-300-9AE	TR,KRC103M		C348	87-015-695-080	CAP, E 1.0M-50V	
DIODE				C350	87-010-544-010	CAP, E 0.1-50V	
	SD-D22-100-9AA	DIODE,ERA22-10		C354	87-016-088-040	CAP, E 220-6.3V	
	SD-D01-000-9AC	DIODE,EU01W		C358	87-015-695-080	CAP, E 1.0M-50V	
	87-020-215-010	DIODE,ERC81-004L22		C371	87-010-544-010	CAP, E 0.1-50V	
	SD-R18-020-9AA	DIODE,ERA18-02KFRB		C373	87-010-544-010	CAP, E 0.1-50V	
	87-070-112-060	DIODE,RU4YXLF		C374	87-010-544-010	CAP, E 0.1-50V<910>	
	87-020-465-080	DIODE,1SS133		C375	87-010-544-010	CAP, E 0.1-50V	
	87-017-011-080	DIODE,IN4003A		C401	87-010-078-080	CAP, E 47M-6.3V	
	87-070-173-010	DIODE,S1WBA60		C403	87-010-544-010	CAP, E 0.1-50V	
MAIN C.B				C405	87-015-681-080	CAP, E 10-16V	
	BC101	S6-360-04C-000	COIL,BFS3550R2FD8	C406	87-015-681-080	CAP, E 10-16V	
	BC102	S6-360-04C-000	COIL,BFS3550R2FD8	C410	87-010-544-010	CAP, E 0.1-50V	
△	C101	S6-240-88F-000	CAP,PCX2 275V 0.1UF,M	C412	87-010-544-010	CAP, E 0.1-50V	
△	C101	S6-240-88F-000	CAP,0.1UF-275V	C415	87-010-552-040	CAP, E 22-16V	
△	C102	S6-240-88F-000	CAP,0.1UF-275V	C420	87-010-408-040	CAP, E 47UF-50V	
△	C103	S0-2TF-H68-0M0	CAP,E 68UF-400V	C423	87-015-698-080	CAP, E 4.7-50V	
△	C105	87-016-375-010	CAP,0.01UF-630V	C424	87-010-544-010	CAP, E 0.1-50V	
△	C106	S6-240-87B-000	CAP,100P-1KV	C466	87-010-403-040	CAP, E 3.3-50V	
C109	87-010-982-040	CAP,E 33UF-25V	C4A1	87-010-552-040	CAP, E 22-16V		
△	C112	87-012-379-010	CAP,3300PF-400V	C500	87-016-040-080	CAP,0.047F-5.5V	
△	C113	SA-1B3-0KH-2M0	CAP,220PF-400V	C501	87-010-544-010	CAP, E 0.1-50V	
C115	S6-240-85D-000	CAP,E 47-50V	C502	87-010-078-080	CAP, E 47M-6.3V		
C116	87-010-237-910	CAP,E 1000UF-16V	C503	87-010-544-010	CAP, E 0.1-50V		
C117	87-016-577-080	CAP,470UF-16V	C504	87-016-088-040	CAP, E 220-6.3V		
C118	87-A10-189-080	CAP,E 220M-10V	C505	87-010-078-080	CAP, E 47M-6.3V		
C119	S6-240-85D-000	CAP,E 47-50V	C507	87-010-544-010	CAP, E 0.1-50V		
C120	87-010-387-010	CAP,E 470UF-25V KME	C508	87-010-544-010	CAP, E 0.1-50V		
C121	87-010-387-010	CAP,E 470UF-25V KME	C510	87-015-684-080	CAP, E 47-16V<910>		
C123	87-010-078-080	CAP,E 47M-6.3V	C513	87-010-544-010	CAP, E 0.1-50V		
C124	87-010-552-040	CAP,E 22-16V	C524	87-010-265-080	CAP, E 33-16V		
C151	87-015-698-080	CAP,E 4.7-50V	C525	87-015-684-080	CAP, E 47-16V		
C152	87-015-698-080	CAP,E 4.7-50V	C526	87-A10-216-080	CAP, E 47M-25V		
C153	87-015-698-080	CAP,E 4.7-50V	C529	87-010-544-010	CAP, E 0.1-50V		
C155	87-010-544-010	CAP,E 0.1-50V	C530	87-015-681-080	CAP, E 10-16V		
C156	87-015-681-080	CAP,E 10-16V	C534	87-015-698-080	CAP, E 4.7-50V		
C157	87-015-681-080	CAP,E 10-16V	C535	87-015-698-080	CAP, E 4.7-50V		
C159	87-015-681-080	CAP,E 10-16V	C541	87-015-698-080	CAP, E 4.7-50V		
C218	87-010-544-010	CAP,E 0.1-50V	C545	87-010-544-010	CAP, E 0.1-50V		
			C546	87-015-684-080	CAP, E 47-16V		
			C561	87-010-078-080	CAP, E 47M-6.3V		
			C588	87-015-698-080	CAP, E 4.7-50V		
			C5F4	87-010-544-010	CAP, E 0.1-50V		
			C5F7	87-010-078-080	CAP, E 47M-6.3V		
			C5F8	87-010-078-080	CAP, E 47M-6.3V		

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C701	87-015-698-080	CAP,E 4.7-50V		LD501	S9-31R-001-7A0	LED	
C702	87-015-681-080	CAP,E 10-16V		MS501	S6-00R-PY0-01B	SW,MMS00420ZMBO MIC	
C703	87-015-681-080	CAP,E 10-16V		P3D01	S5-612-34Y-000	CONN,6P<970>	
C704	87-010-078-080	CAP,E 47M-6.3V		P3D01	S5-612-34Z-000	CONN,3P<910>	
C706	87-016-577-080	CAP,470UF-16V		P3D02	S6-30R-580-08E	CONN,6P	
C781	87-010-265-080	CAP,E 33-16V		P3D03	S5-612-51B-000	CONN,2P	
C902	87-016-577-080	CAP,470UF-16V		PMC01	S6-30R-2P0-05C	CONN,8P	
C905	87-015-681-080	CAP,E 10-16V<910>		PMD01	S5-612-34V-000	CONN,7P	
C906	87-015-681-080	CAP,E 10-16V<910>		PMK01	S6-724-34B-000	CONN,5P	
C912	87-016-577-080	CAP,470UF-16V<970>		PMK02	S5-618-43J-000	CONN,10P	
C941	87-015-681-080	CAP,E 10-16V<970>		PML01	S6-30R-250-11A	CONN,2P	
C943	87-015-681-080	CAP,E 10-16V<970>		▲PW101	S5-612-92B-000	CONN,2P	
C944	87-015-681-080	CAP,E 10-16V<970>		▲R101	S6-140-07A-000	RES,2.7-2W	
C945	87-015-681-080	CAP,E 10-16V<970>		▲R102	SR-S10-03K-619	RES,100K-2W	
C946	87-015-681-080	CAP,E 10-16V<970>		▲R104	SR-S56-02K-619	RES,56K-2W	
C947	87-015-681-080	CAP,E 10-16V<970>		▲R109	SR-S03-50K-619	RES,0.35-2W	
C948	87-015-681-080	CAP,E 10-16V<970>		R524	SR-F06-81J-619	6.8 OHM 1 W 5% TR	R
C949	87-010-544-010	CAP,E 0.1-50V<970>		RS501	S5-00R-AB0-02A	GP1S566 SHARP D-33 REEL SENSO	
C950	87-015-681-080	CAP,E 10-16V<970>		RS502	S5-00R-AB0-02A	GP1S566 SHARP D-33 REEL SENSO	
C951	87-015-684-080	CAP,E 47-16V		T101	S6-420-23M-000	TRANS EER2828	
C952	87-010-544-010	CAP,E 0.1-50V		TL401	S6-330-32K-000	COIL,OSC BIAS 1CHIP 5V	
C953	87-015-681-080	CAP,E 10-16V<970>		TU701	S7-00R-J3L-03A	TUNER TADC-S003D LGC&N BG SECA	
C955	87-015-681-080	CAP,E 10-16V<970>		VR501	S6-130-32W-000	VR,RH063MCJ5R(220K)	
CS501	S6-00R-DB0-04C	SW,MPU1025MLB4 MIC		X201	S2-02R-142-8AC	X'TAL,4.286M 16PF	
DIGF5F1	S3-02R-1N0-03B	7MT229GK MONO FUTABA UNIVERSA		X201	S2-02R-142-8BE	X'TAL,4.286230MHZ	
DIGF5F1	S3-02R-2N0-03B	SVV07MM16 MONO SAMSUNG UNIVER		X301	S2-02R-144-3AE	X'TAL,4.433709MHZ 15PPM	
ES501	S9-31R-001-6A0	SENSOR END		X501	S2-02R-310-01E	X'TAL,10.0000	
ES502	S9-31R-001-6A0	SENSOR END		X502	S5-290-01K-000	X'TAL,32.768KHZ	
▲F101	S5-850-11T-000	FUSE,1600MA 250V		X503	S2-02R-317-71E	X'TAL,17.7344	
▲F103	87-001-196-010	ICP-N10 T104		X5F1	S6-180-10B-000	X'TAL,4MHZ	
▲FH01	S5-860-08B-000	FUSE CLUMP		ZD104	83-NEG-677-080	DIODE,MTZ5.6B	
▲FH02	S5-860-08B-000	FUSE CLUMP		ZD151	SD-Z13-000-9AA	ZENER,MTZ13A	
▲FR02	SR-F04-71Q-619	4.7 OHM 1/4 W (3.4) 5% TR R		ZD152	S9-7U0-100-1C0	MTZ10-C	
JK901	S6-20R-M00-02A	JACK 42P		ZD153	SD-Z13-000-9AA	ZENER,MTZ13A	
▲L102	S6-161-45H-000	FILTER SHT LFS2020V4-04350		ZD501	SM-TZ6-8CT-000	ZENER,MTZ6.8C	
L103	S6-330-88G-000	COIL,CHOCK TP 5MM 27MH		ZD503	83-NEG-678-080	ZENER,MTZ6.2B	
L104	S6-330-88G-000	COIL,CHOCK TP 5MM 27MH		ZD5F1	SD-Z51-000-9HA	ZENER,MTZ5.1B 0.5W	
L105	87-005-696-080	COIL,100M		ZD701	87-002-743-080	ZENER,MTZ33B	
L201	87-005-693-080	COIL,56M 2.3-3.4-5		ZD9A1	SD-Z13-000-9AA	ZENER,MTZ13A	
L301	87-005-196-080	COIL,10UH					
L302	87-005-693-080	COIL,56M 2.3-3.4-5		FRONT-1 C.B			
L303	87-005-438-080	COIL,33M 2.3-3.4-5					
L304	87-005-696-080	COIL,100UH		PMK02	S5-618-44J-000	CONN,10P	
L306	87-005-696-080	COIL,100UH		SW5A1	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L307	87-005-696-080	COIL,100UH		SW5A2	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L308	S2-165-120-000	COIL,12M 2.3-3.4-5		SW5A3	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L309	87-005-696-080	COIL,100UH		SW5A4	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L401	87-005-683-080	COIL,8.2M		SW5A5	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L402	SL-R68-01J-045	COIL,6800U J 6-7-5		SW5A6	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L405	87-005-196-080	COIL,10UH					
L502	87-005-696-080	COIL,100UH		FRONT-2 C.B			
L505	87-005-696-080	COIL,100UH					
L506	87-005-686-080	COIL,15UH		LD5A1	SD-L53-110-0AA	LED,SG5311(GRN)	
L507	87-005-696-080	COIL,100M		PMK01	S5-610-36D-000	CONN,5P	
L5S1	87-005-438-080	COIL,33M 2.3-3.4-5		SW5A0	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L701	87-005-696-080	COIL,100UH		SW5A7	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L702	87-005-196-080	COIL,10UH		SW5A8	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L703	87-005-196-080	COIL,10UH		SW5A9	S5-562-82C-000	SW,SKQNQED ALPS 5MM	
L704	87-005-683-080	COIL,8.2M					
L901	87-005-696-080	COIL,100M					
L902	87-005-696-080	COIL,100M					
L903	SL-A01-01K-018	1.0M K 2.3X3.4 L5 TP	L				
L904	87-005-696-080	COIL,100M					
L905	S6-360-04C-000	BEAD CORE,BFS3550R2FD8					
L906	87-005-696-080	COIL,100M					
L907	S6-360-04C-000	BEAD CORE,BFS3550R2FD8					
L911	87-005-696-080	COIL,100M<970>					
L912	87-005-696-080	COIL,100M<970>					
L914	87-005-696-080	COIL,100M<970>					
L916	87-005-696-080	COIL,100M<970>					

WIRE HARNESS DIAGRAM

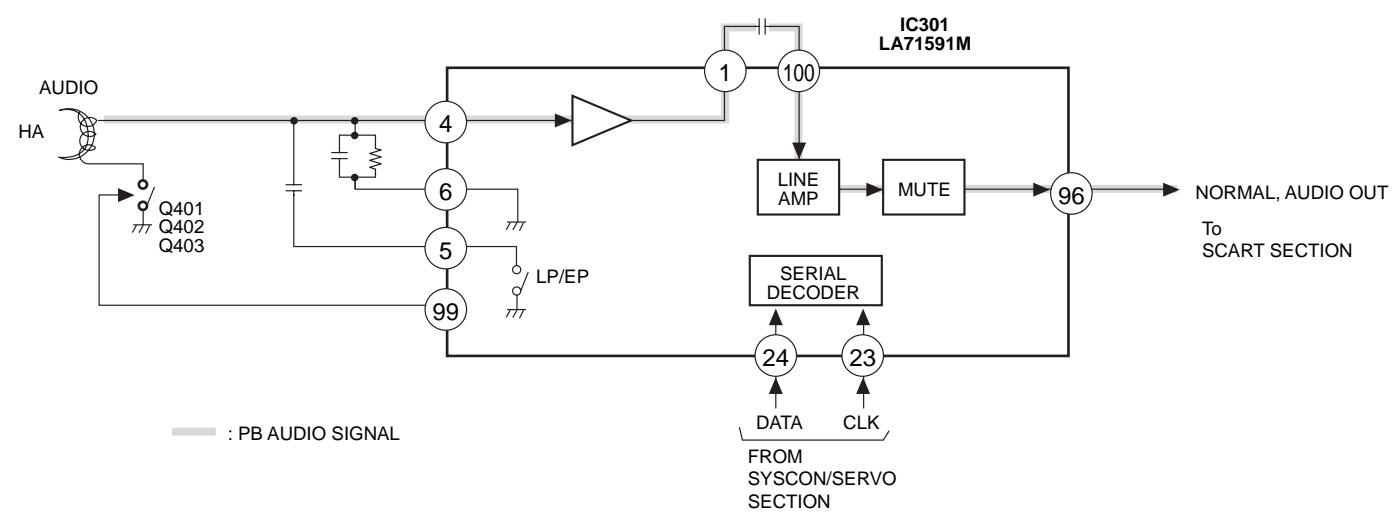


BLOCK DIAGRAM-1 (POWER SECTION)



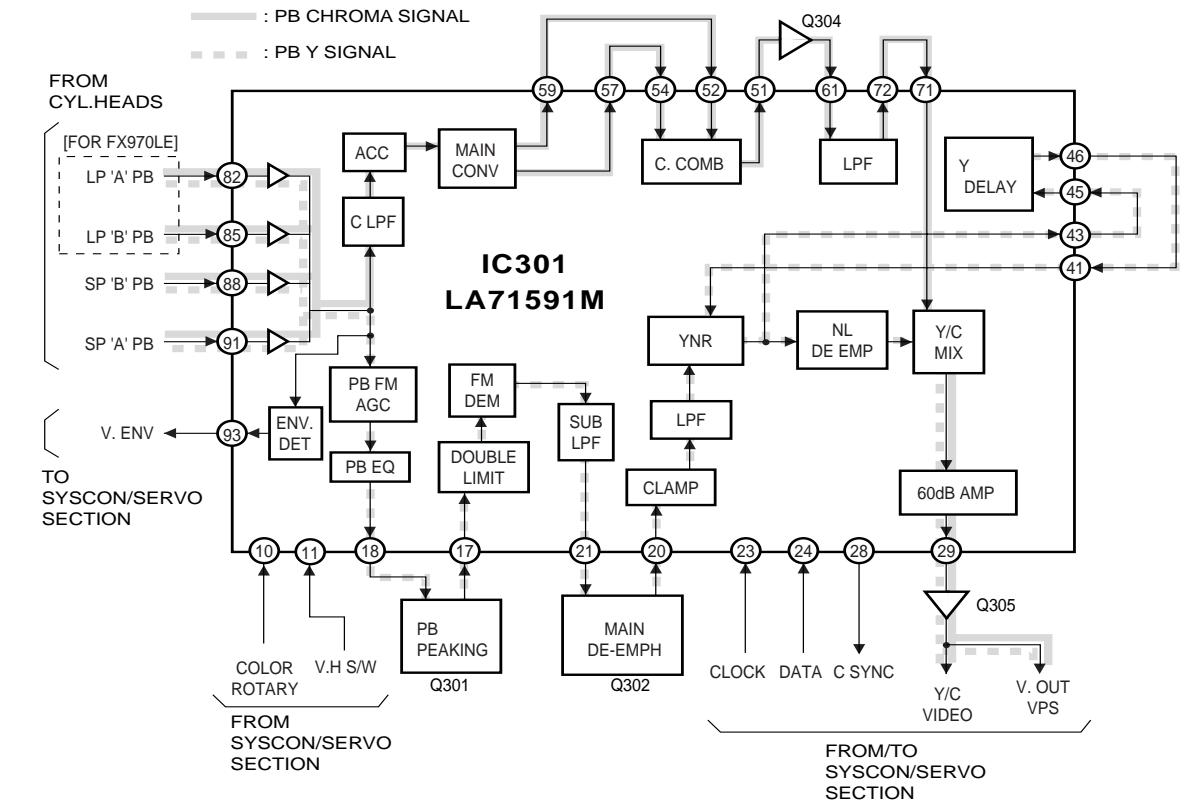
BLOCK DIAGRAM-2 (AUDIO SECTION)

•PB Mode

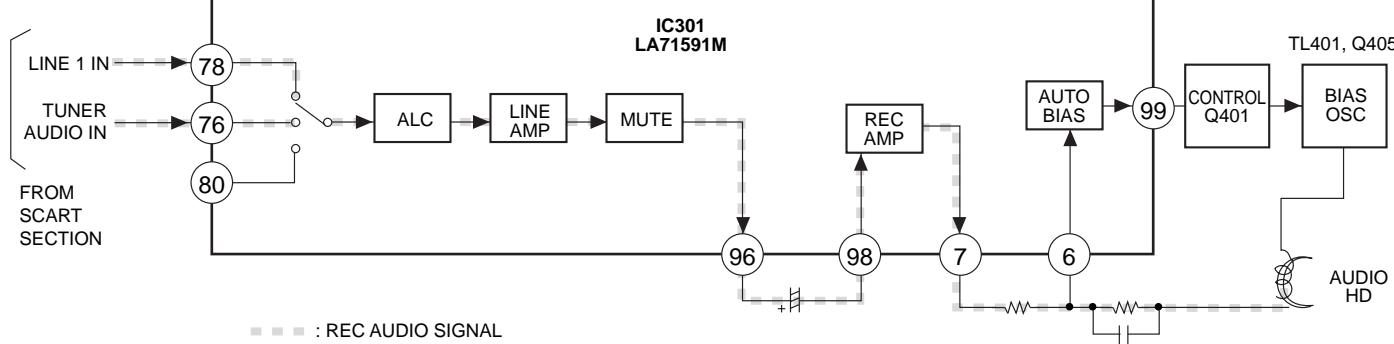


BLOCK DIAGRAM-3 (VIDEO SECTION)

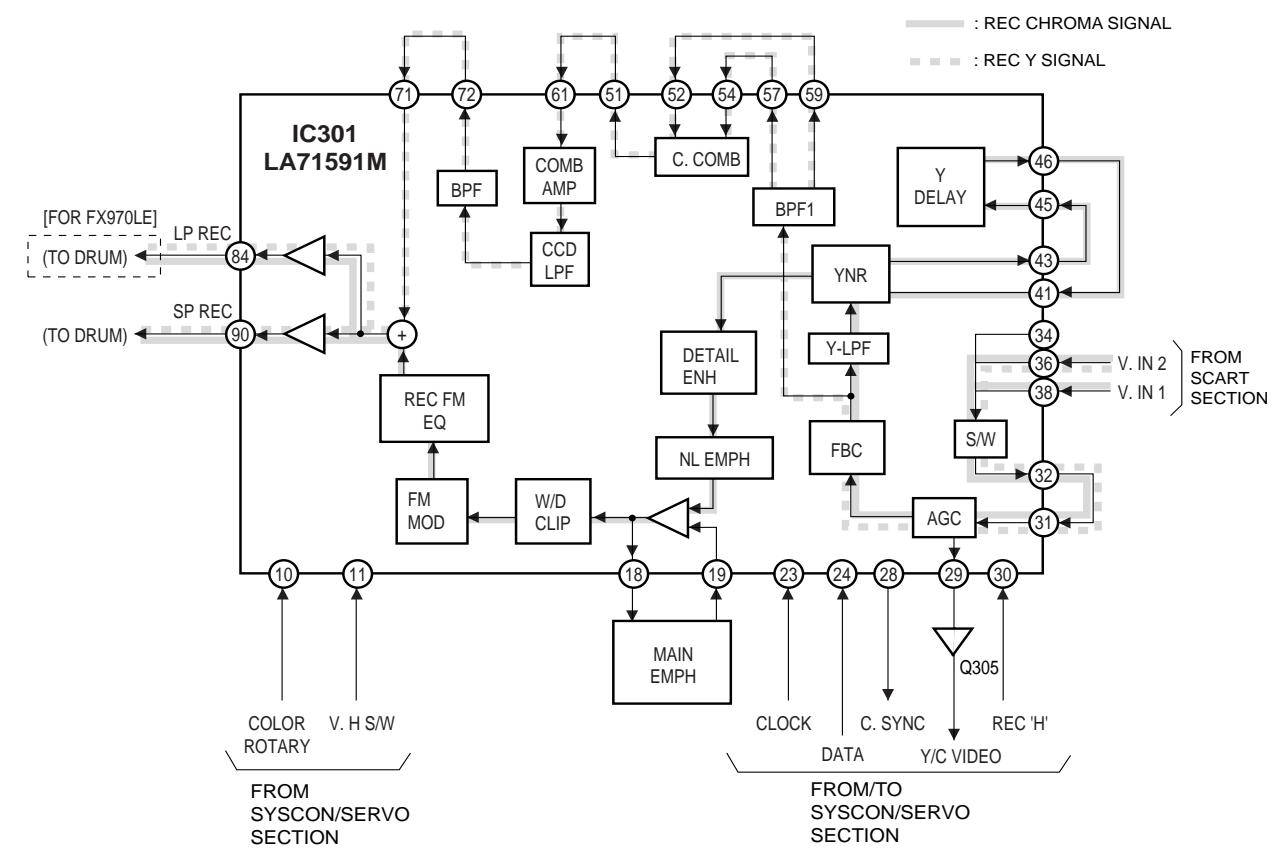
•PB Mode



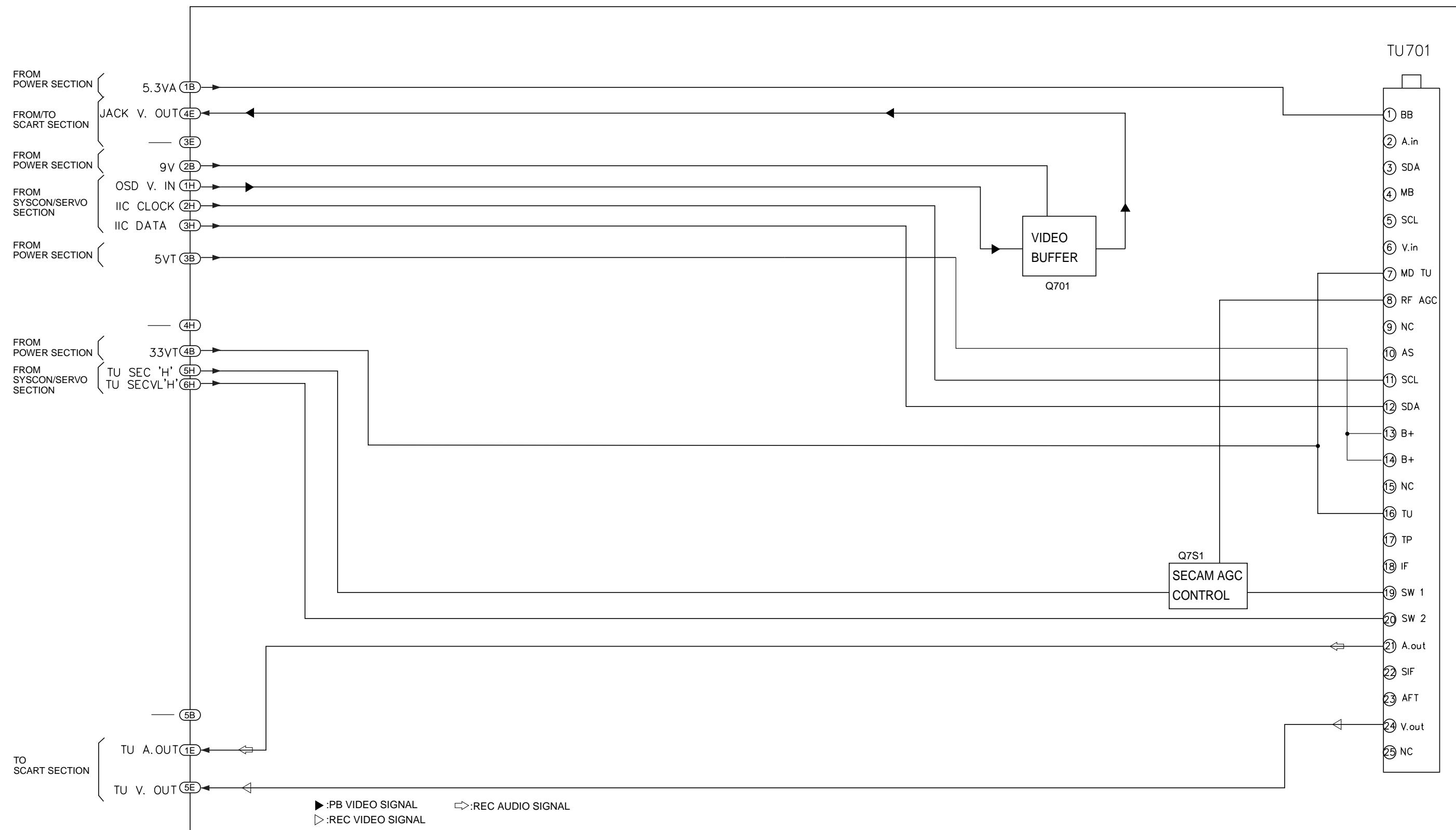
•REC Mode



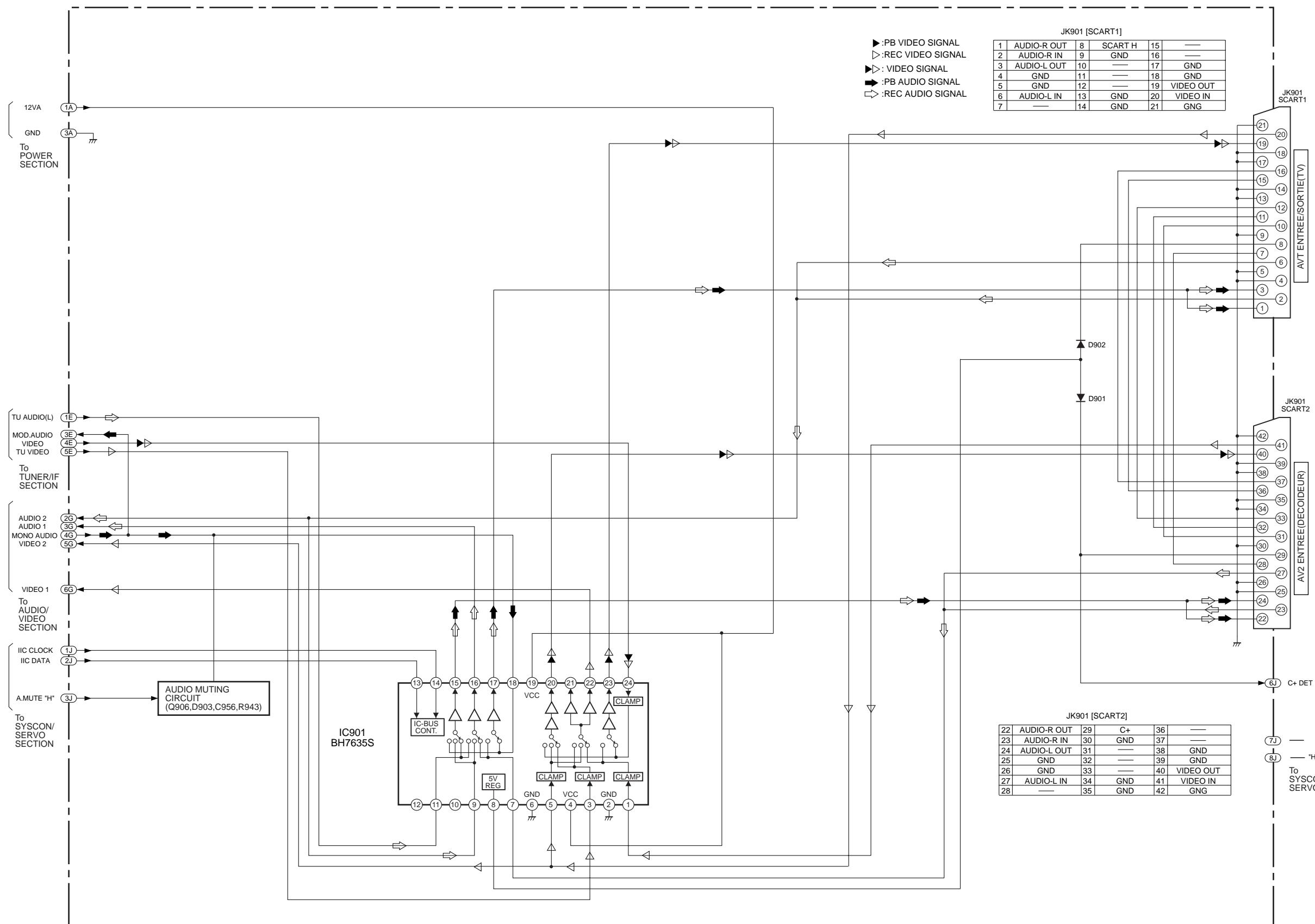
•REC Mode



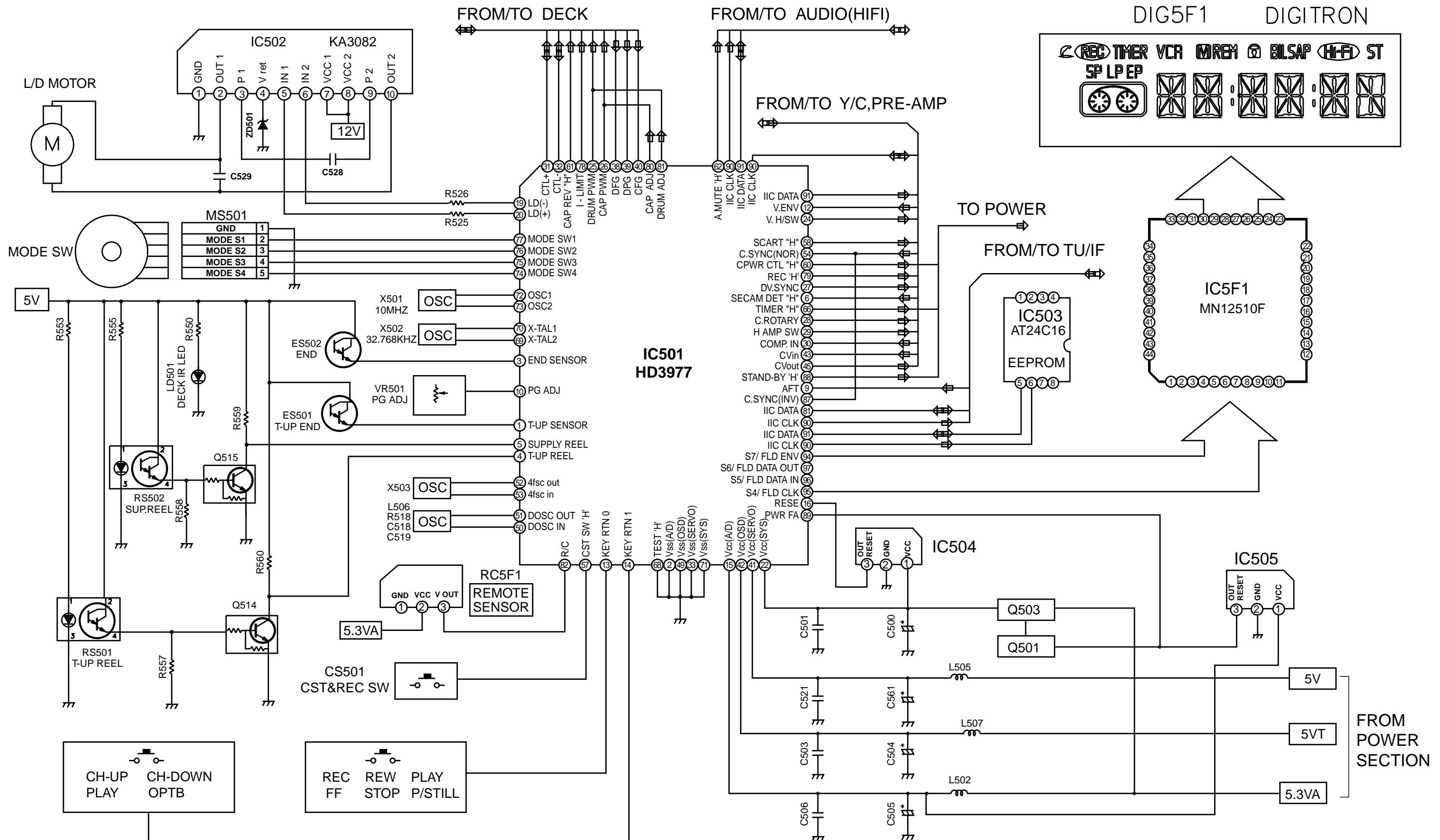
BLOCK DIAGRAM-4 (TUNER SECTION)



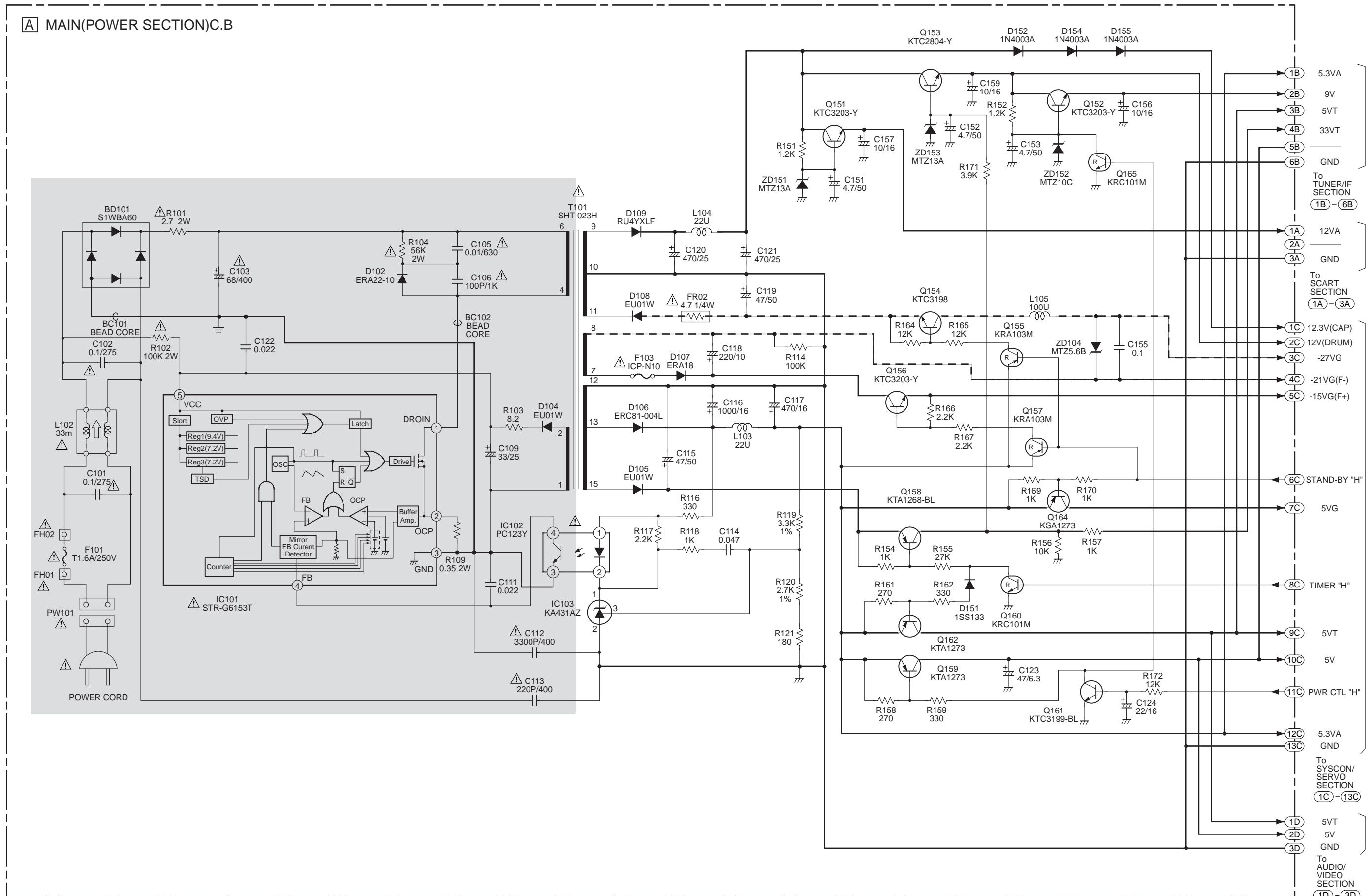
BLOCK DIAGRAM-5 (SCART SECTION)



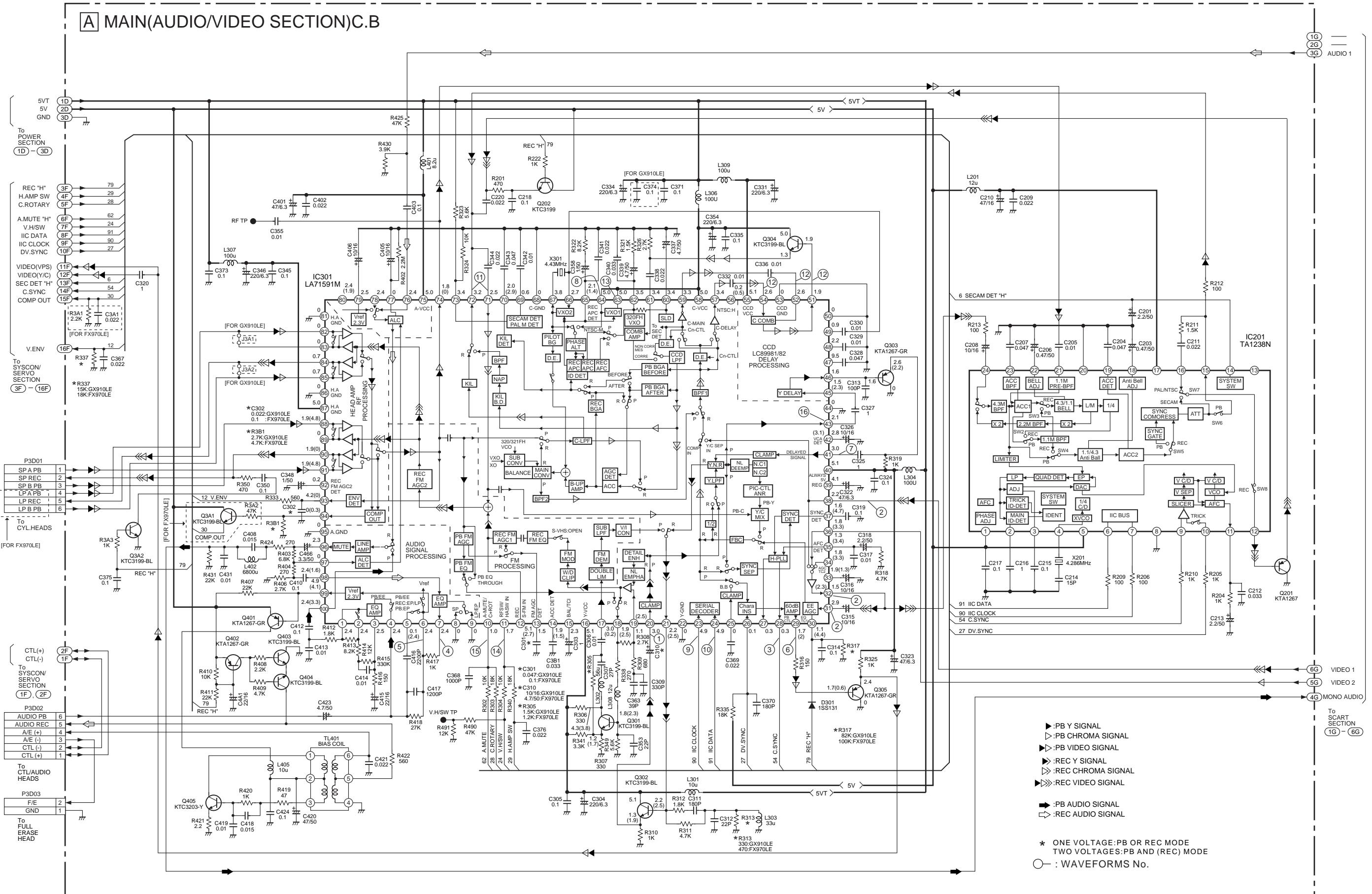
BLOCK DIAGRAM-6 (SYSTEM CONTROL SECTION)



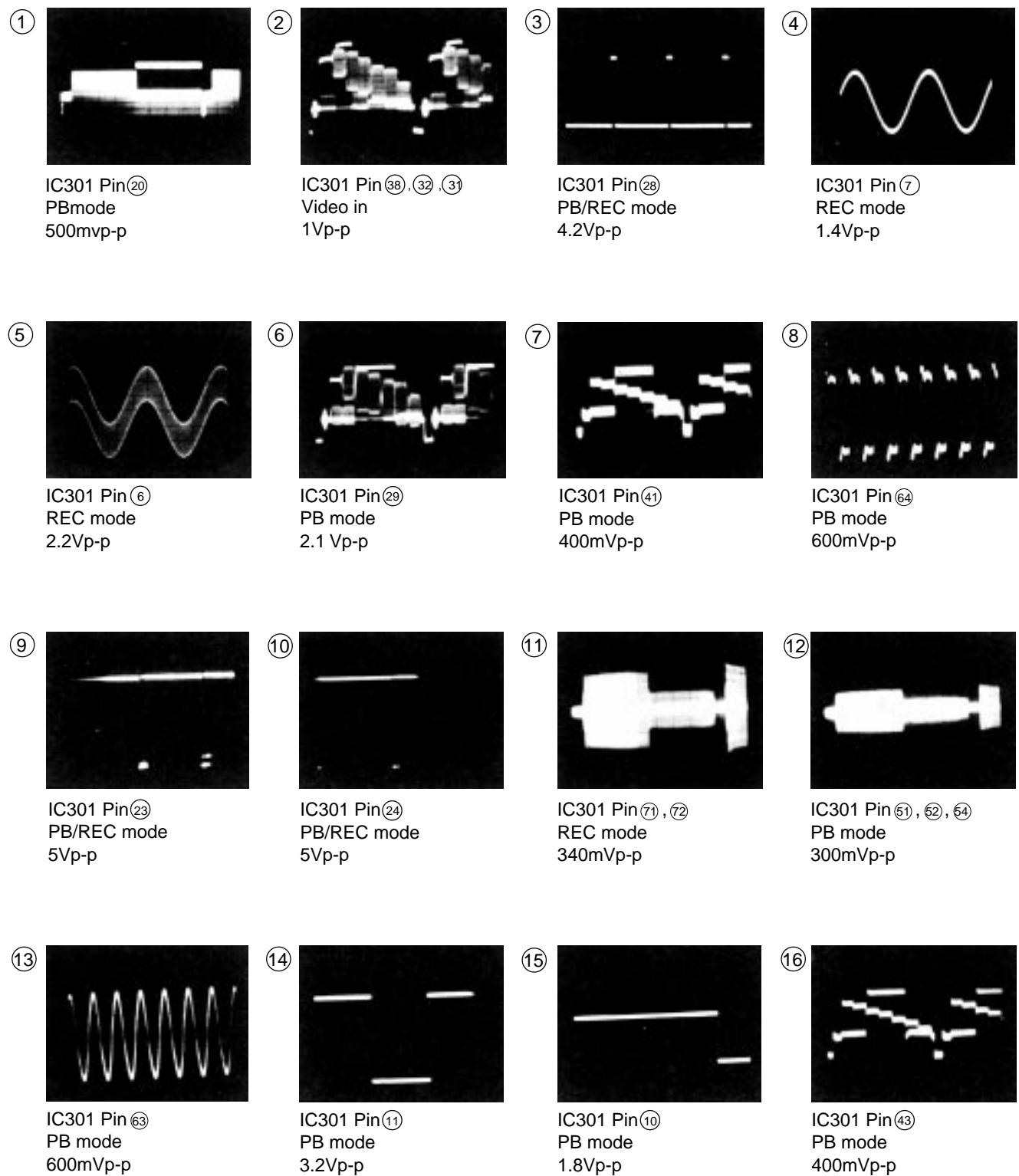
SCHEMATIC DIAGRAM-1(POWER SECTION)



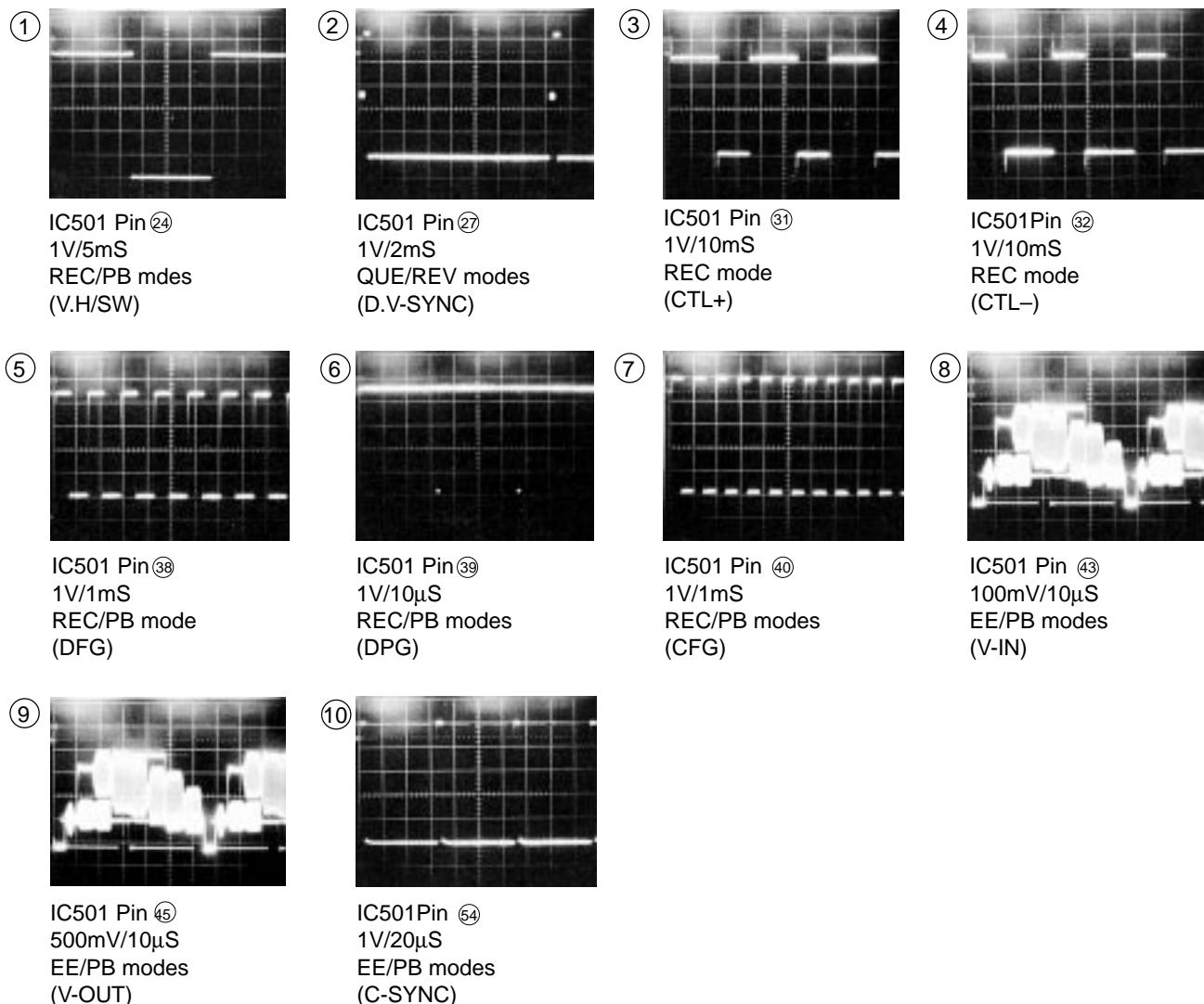
SCHEMATIC DIAGRAM-2 (AUDIO/VIDEO SECTION)



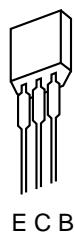
WAVEFORM-1 (VIDEO SECTION)



WAVEFORM-2 (SERVO/OSD SECTION)



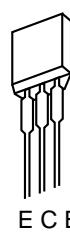
TRANSISTOR ILLUSTRATION



KRA103M
KRC101M
KRC103M
KTA1267
KTC3198
KTC3199



KTA1268
KTC3203



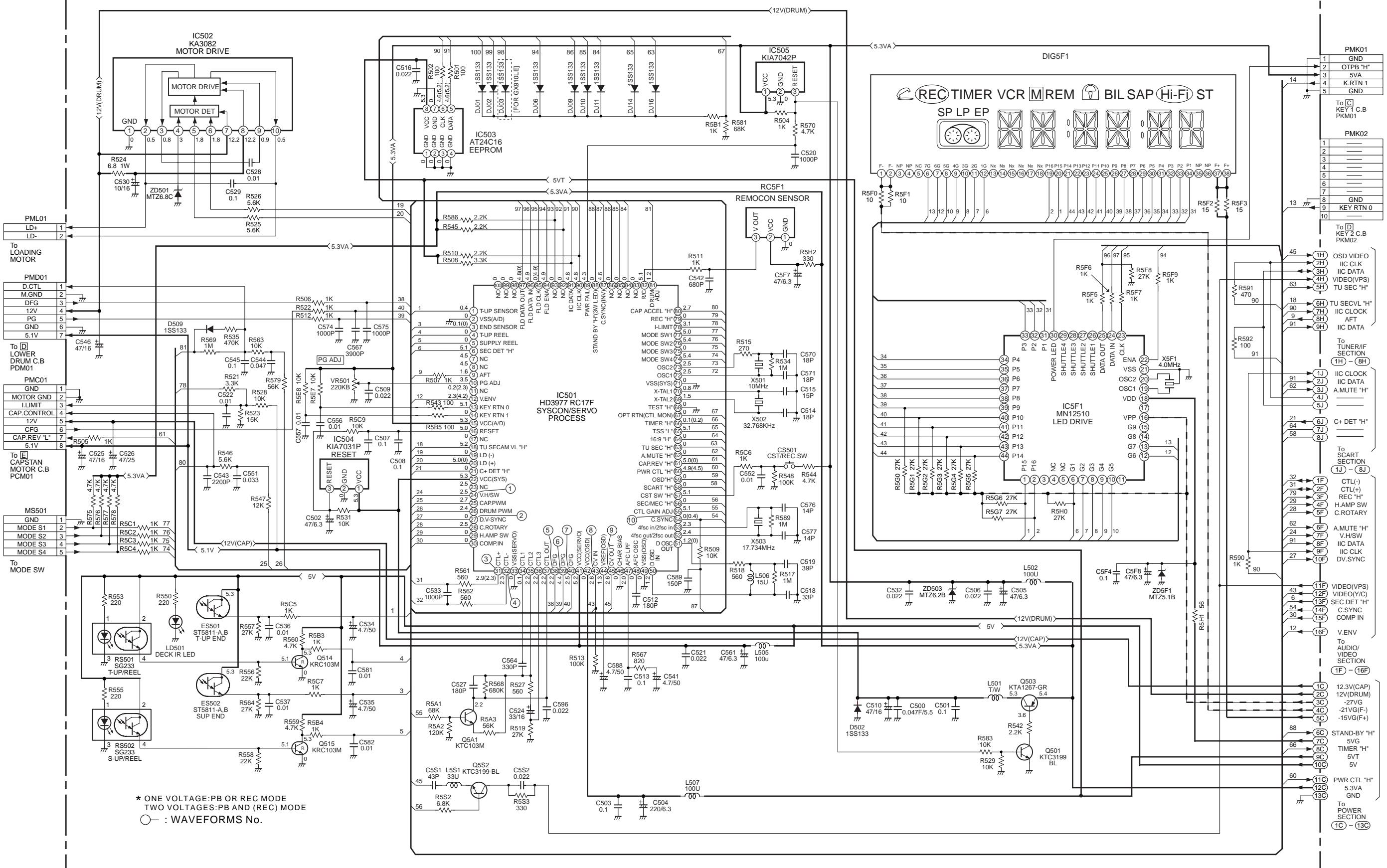
KTA1273



KTC2804

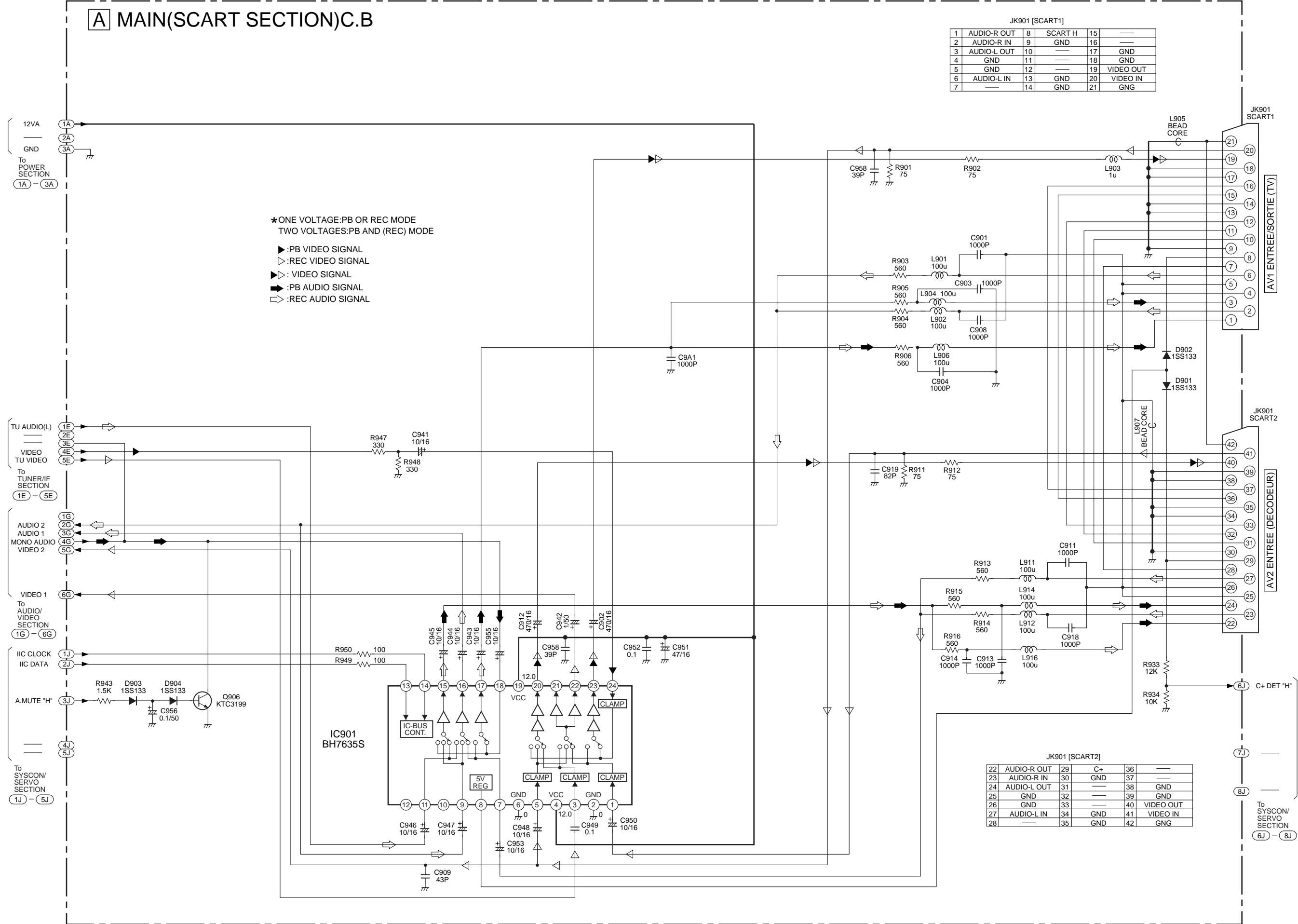
SCHEMATIC DIAGRAM-3 (SYSTEM CONTROL/SERVO SECTION)

A MAIN(SYSCON/SERVO SECTION)C.B

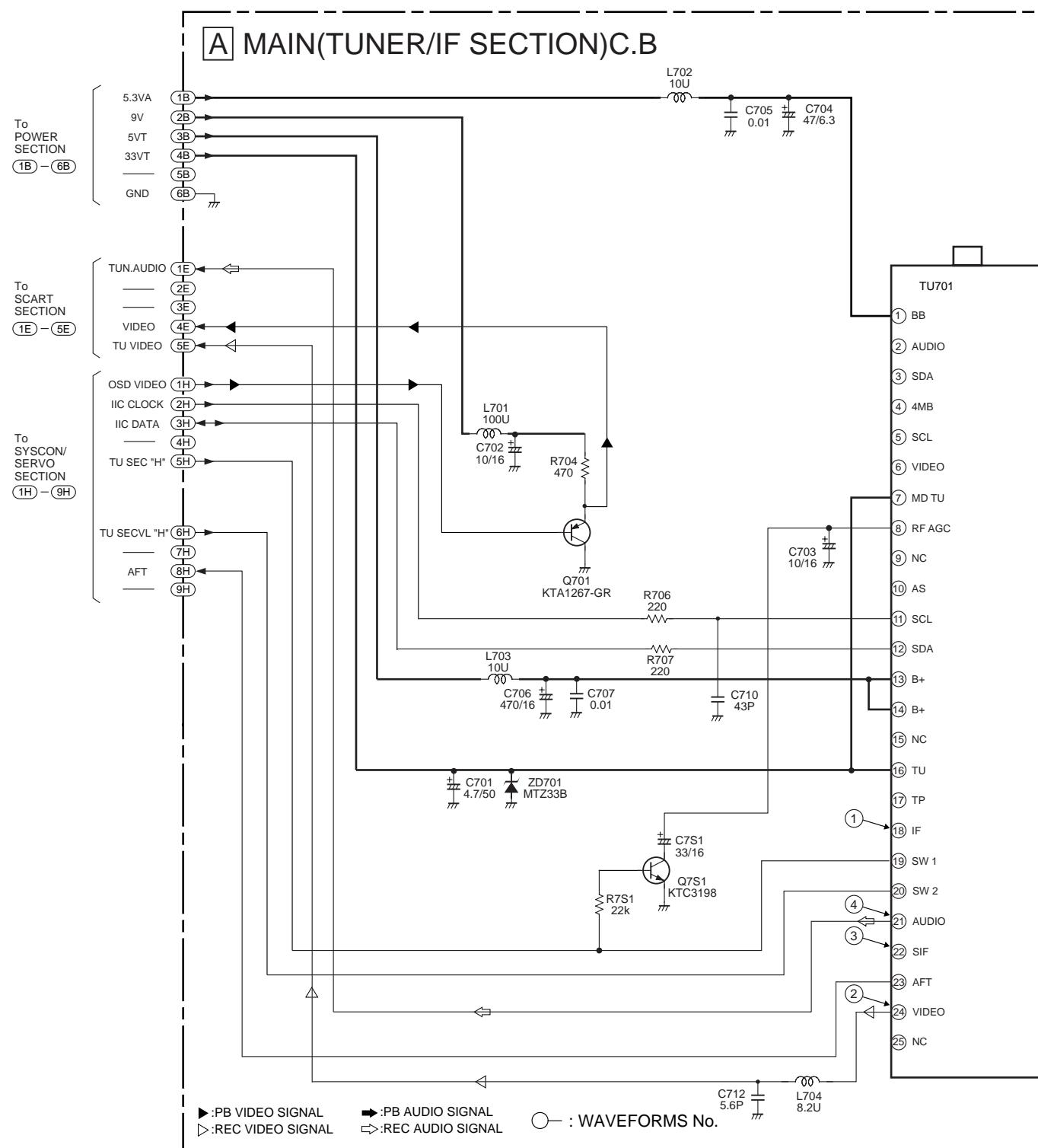


SCHEMATIC DIAGRAM-4 (SCART SECTION)

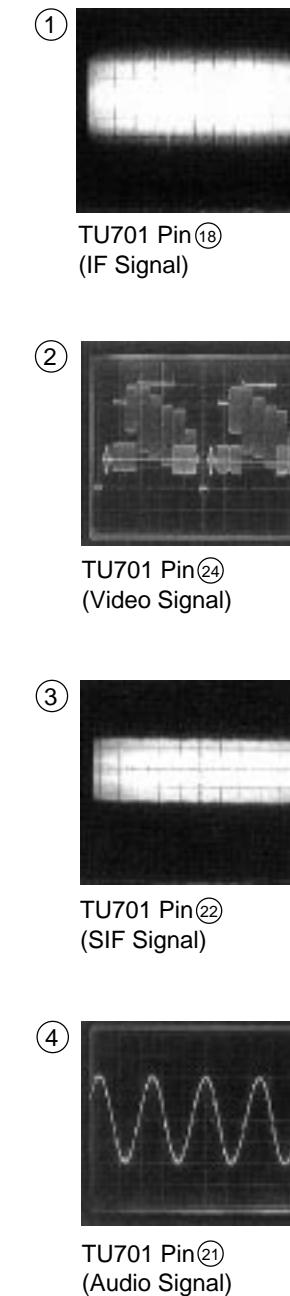
A MAIN(SCART SECTION)C.B



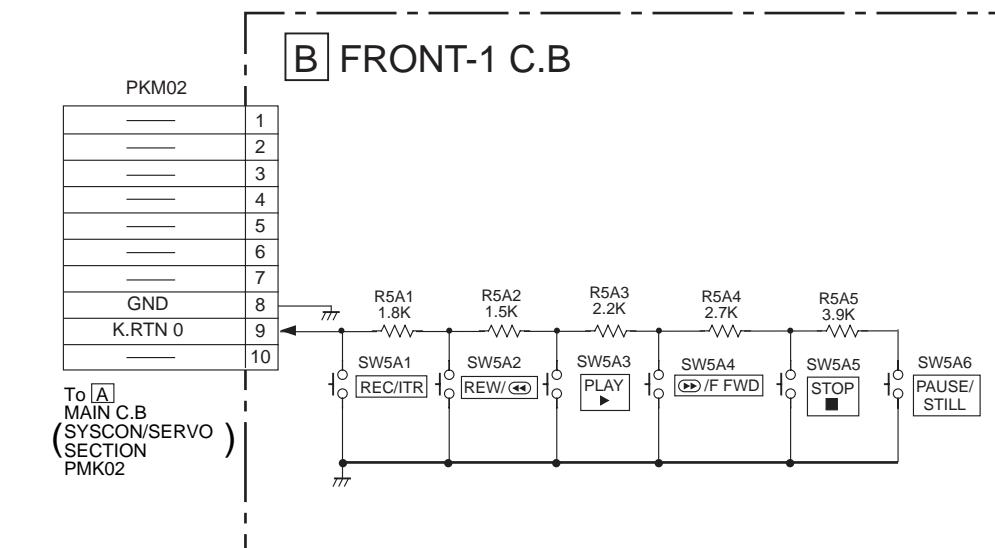
SCHEMATIC DIAGRAM-5 (TUNER/IF SECTION)



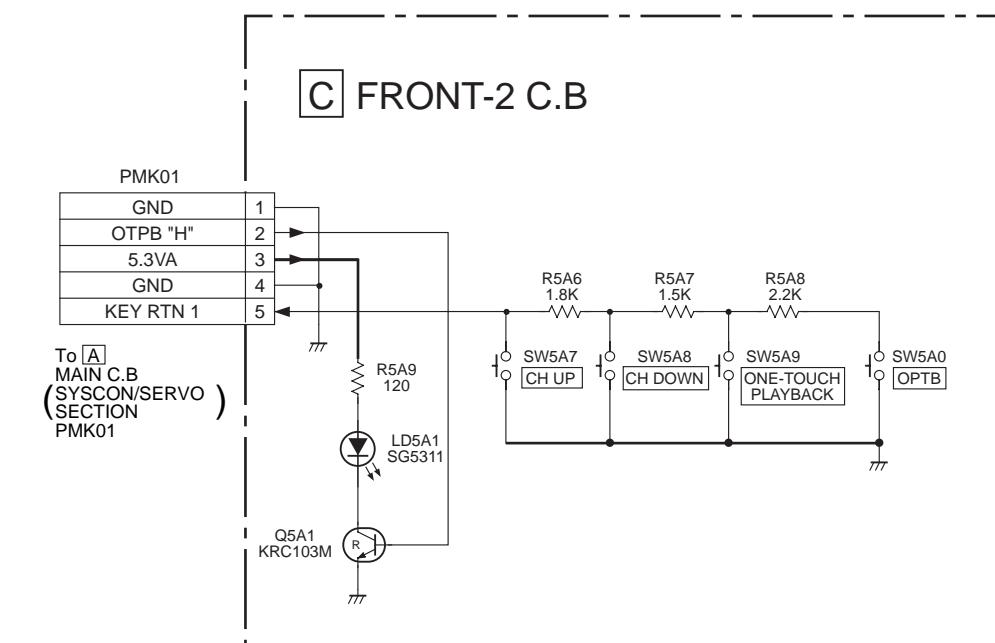
WAVEFORM-3



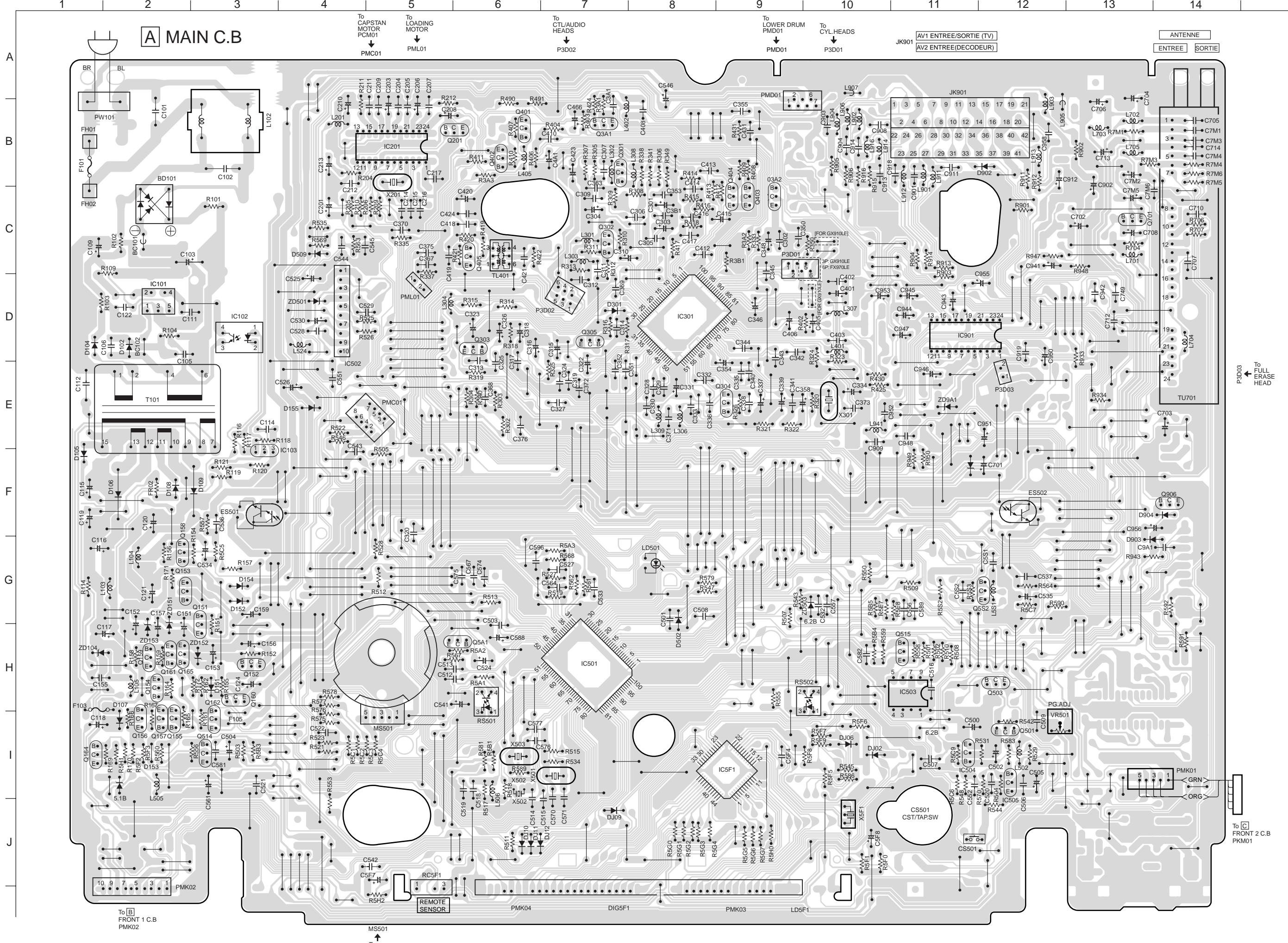
SCHEMATIC DIAGRAM-6 (FRONT-1 C.B)



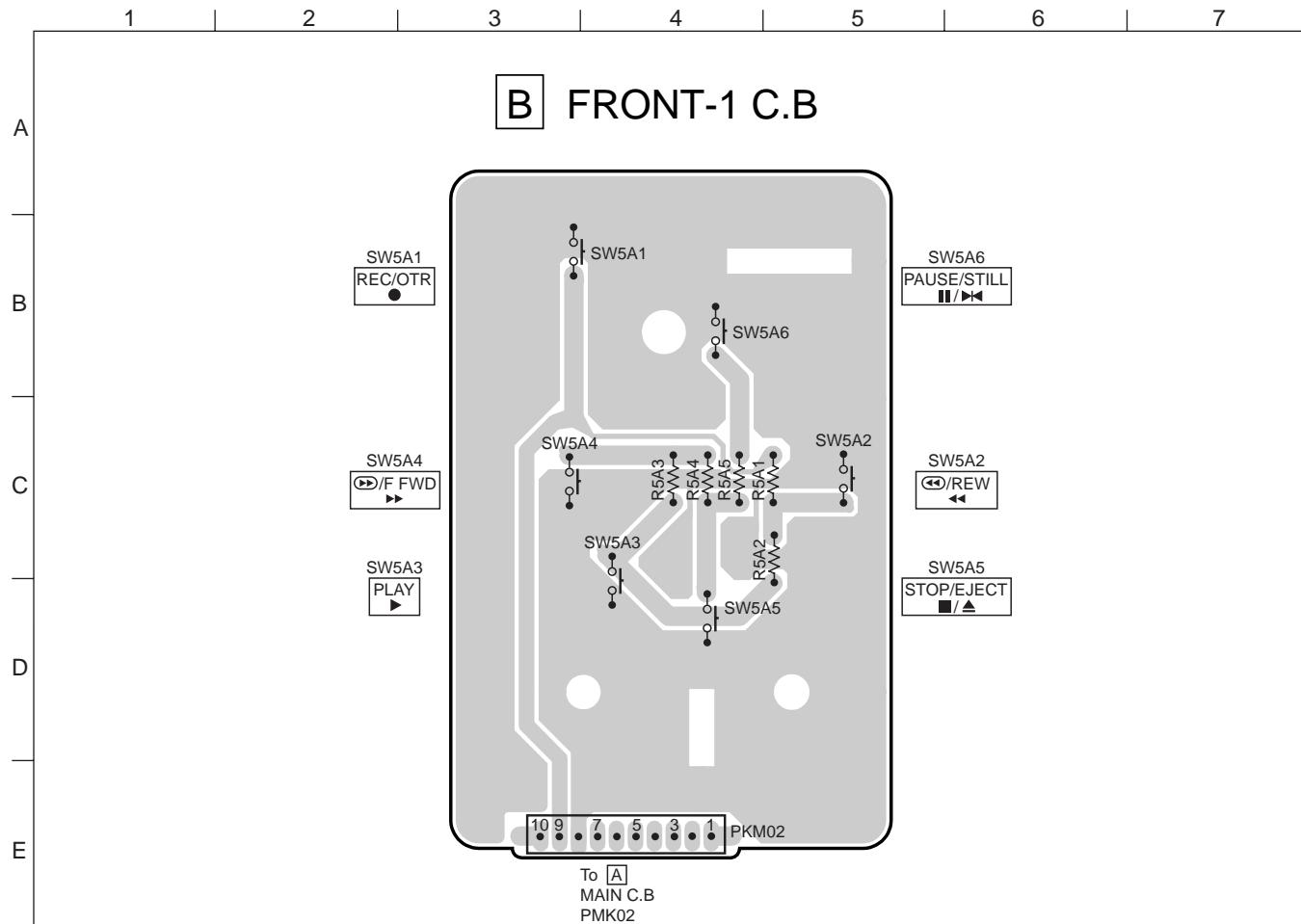
SCHEMATIC DIAGRAM-7 (FRONT-2 C.B)



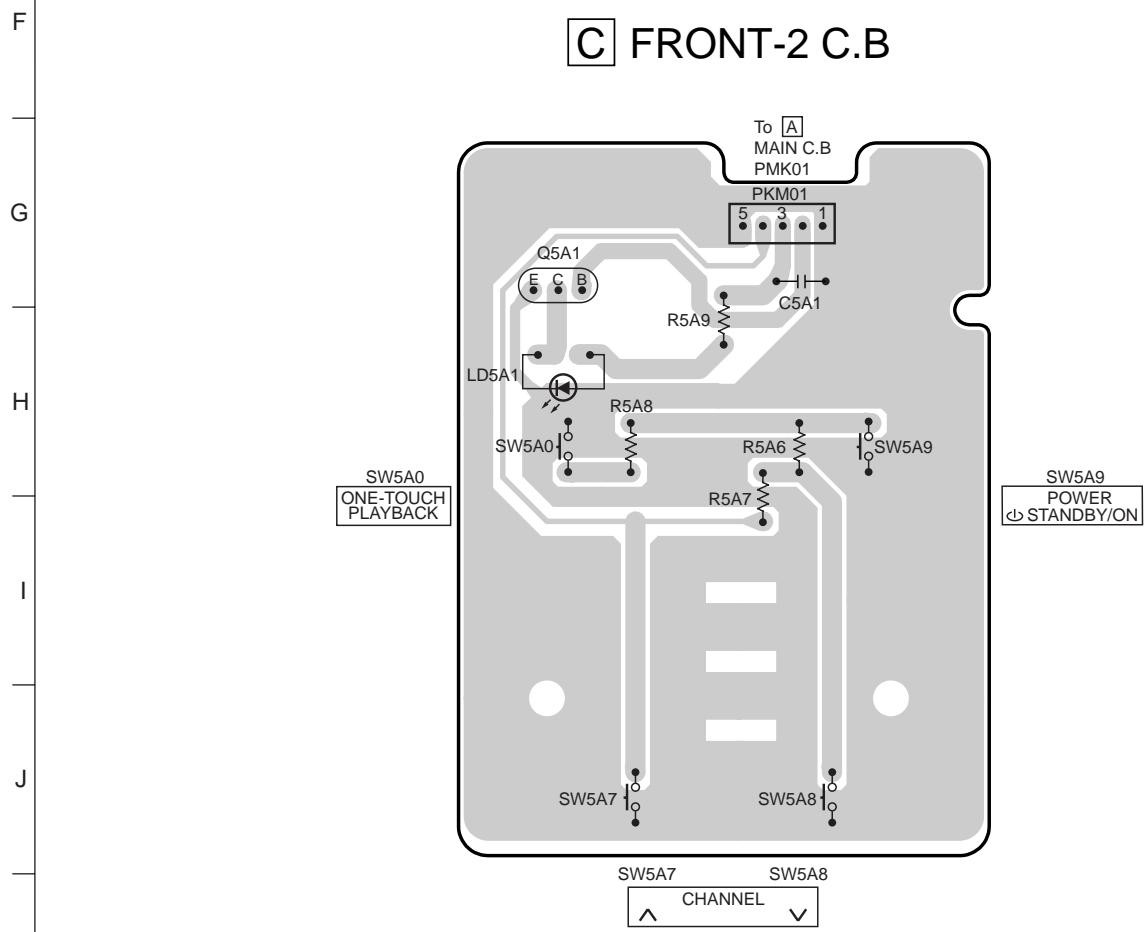
WIRING-1 (MAIN C.B SECTION)



WIRING-2 (FRONT-1 C.B)

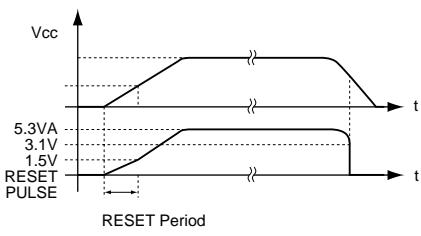


WIRING-3 (FRONT-2 C.B)



IC DESCRIPTION
IC, HD3977RC17F

Pin No.	Pin Name	I/O	Description								
1	TAKE UP SENSOR	I	End sensor to detect the tape's terminal (Lead taps section). If "H" is detected signal in the REW, REV modes, the mechanism stops and ejects the cassette automatically.								
2	VSS (A/D)		Ground.								
3	END SENSOR	I	End sensor to detect tape's terminal (Lead tape section). If "H" signal is detected in the FF mode, then REW mode will occur automatically.								
4	TAKE UP REEL	I	<p>1. When the tape is transporting. Reel pulses are input.</p> <p>2. If the tape is transporting and take-up reel pulses are not input during regular time, the unit stops at STOP point automatically.</p> <table border="1"> <thead> <tr> <th>Each operating mode</th><th>Sec</th></tr> </thead> <tbody> <tr> <td>PLAY, REC</td><td>SP=3 EP/LP=6</td></tr> <tr> <td>FF, (REW)</td><td>2</td></tr> <tr> <td>CUE, (REV)</td><td>1</td></tr> </tbody> </table> <p>3. Distinguishes the tape type, counts the tape remaining and reduces the tape speed at the end of FF/REW modes.</p>	Each operating mode	Sec	PLAY, REC	SP=3 EP/LP=6	FF, (REW)	2	CUE, (REV)	1
Each operating mode	Sec										
PLAY, REC	SP=3 EP/LP=6										
FF, (REW)	2										
CUE, (REV)	1										
5	SUPPLY REEL	I	<p>1. When the tape is transporting, Reel pulses are input.</p> <p>2. Distinguishes the tape type, counts the tape remaining and reduces the tape speed at the end of FF/REW modes.</p> <p>3. If supply reel pulses are not detected, FF/REW mode is not operating normally. And the unit stops at stop point automatically. (Refer to table of pin 17.)</p>								
6	SED DET "H"	I	System detect for B/G or SECAM in VV/EE mode. (from SECAM I.C)								
7	NC "L"	—	Not connect								
8	NC "R"	—	Not connect								
9	AFT	I	<p>Port to detect AFT (+)'s state during tuning. When more than 4V, is detected by AFT (+) detector.</p> <p>Detects AFT (-)'s state during tuning. When less than 0.96V, is detected by AFT (-) detector.</p>								
10	PG ADJ	I	A DC bias level set by VR501 determines the pulse width of PG M.M for H. S/W 30 switching interval.								
11	NC	—	Not connect.								
12	V.ENV	I	<p>1. Reference input signal to perform auto tracking mode. Video envelope (F/F) signal is input through LPF.</p> <p>2. Perform auto tracking mode by sampling video envelope signal which is input during a period of head switching and changing servo tracking data to obtain maximum value.</p> <p>Note : When the DC level of the envelope is at its maximum, it is considered tracking properly.</p>								
13	KEY RTN 0	I	KEY RTN 0								

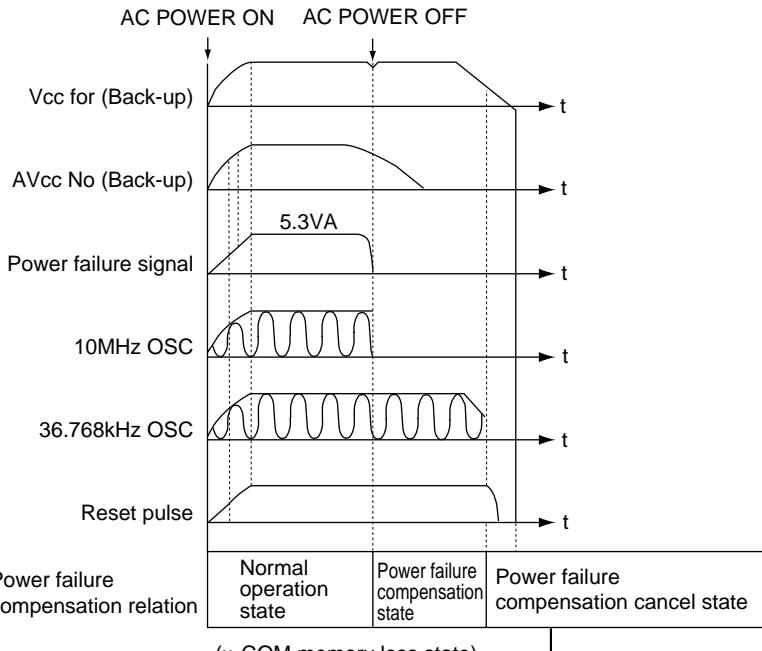
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4	PLAY	1.48V ~ 1.97V																			
5	POWER	1.99V ~ 2.48V																			
15	VCC(A/D)	-	A/D Vcc.																		
16	RESET	I	<p>1. Initially 5.3 VA is applied to Vcc pin 22 of μ-COM. This pulse is applied to clear the RAM inside the μ-COM and to reset programs to 0000H in ROM. 2. Reset timing pulse.</p> 																		
17	NC	-	Not connect																		
18	TUNER SECAM VL "H"	O	Now TUNING BAND is SECAM VHF-L. (to TUNER)																		
19	LD (-)	O	<p>1. Output signal to IC502 for control of the loading motor's direction of rotation. 2. Control table of loading motor's driving direction.</p> <table border="1"> <thead> <tr> <th>Pin 19</th><th>Pin 20</th><th>Rotation of Loading Motor</th></tr> </thead> <tbody> <tr> <td>H</td><td>H</td><td>Brake Mode.</td></tr> <tr> <td>H</td><td>L</td><td>Reverse Direction.</td></tr> <tr> <td>L</td><td>H</td><td>Forward Direction.</td></tr> </tbody> </table>	Pin 19	Pin 20	Rotation of Loading Motor	H	H	Brake Mode.	H	L	Reverse Direction.	L	H	Forward Direction.						
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H	H	Brake Mode.																			
H	L	Reverse Direction.																			
L	H	Forward Direction.																			
20	LD (+)																				
21	C+DET "H"	I	Now input signal is CANAL/PREMIER. (from SCART 2)																		

Pin No.	Pin Name	I/O	Description
22	Vcc (SYS)	-	SYSCON Vcc.
23	A.H.S/W 30	O	Not connect
24	V.H.S/W	O	<p>Pulses output for switching video head A and B.</p> <ul style="list-style-type: none"> - Produces PG M.M pulses internally by using inputted DPG, DFG pulses to pin 38, 39. - Produces video head switching 30 Hz pulses by synchronizing at edge point of first PG. M.M.(PG monostable multivibrator) - Produces audio head switching 30 Hz pulses by synchronizing at edge point of second PG.M.M.
25	CAPSTAN PWM	O	<ul style="list-style-type: none"> - Output pulses (PWM waveform) for controlling capstan motor speed and phase; control feedback voltage which is inputted to the capstan motor driver IC. - Output pulses (PWM waveform) for controlling capstan motor stop and drive during slow mode.
26	DRUM PWM	O	Output pulses (PWM waveform) for controlling drum motor speed and phase; control feedback voltage which is inputted to the drum motor driver IC.
27	D.V. SYNC.	O	Provides an output sync signal to prevent the picture from rolling upward or downward, when the video track is not being scanned in the search mode.
28	COLOR ROTARY	O	A pulse to control phase of color at Y/C circuit.
29	HEAD AMP S/W	O	A pulse for switching the HEAD SP and EP on the DRUM.
30	COMP IN	I	A reference signal for switching video head (SPA, SPB, EPA, EPB) on the drum in search the mode.
31	CTL (+)	I/O	CTL pulse is outputted at recording, CTL pulse is inputted at playback. Functions which control Capstan motor phase at playback, check tape speed, Viss and Real time counter are performed by using CTL pulse (input/output).
32	CTL (-)		
33	Vss (SERVO)	-	Servo circuit GND in the μ -COM.
34	CTL 1	I/O	Port for gain (Amp) control of CTL pulse during recording and playback.
35	CTL 2		
36	CTL 3		
37	CTL OUT		
38	D.FG	I	<p>D.FG pulse input according to rotation of drum motor.</p> <p>Produces Audio/Video Head S/W 30Hz by using these pulses. And it is used as a comparison signal for speed control of the drum motor.</p>
39	D.PG	I	<p>One D.PG pulse is generated for each rotation the drum motor and inputted to μ-COM.</p> <p>When producing Head S/W pulses, D.PG pulse is used as reference point, and it is used as comparison signal when controlling drum motor phase.</p>
40	C.FG	I	<p>C.FG pulses are generated by the rotating capstan motor and are inputted to μ-COM.</p> <p>When checking tape speed and controlling. The capstan motor phase, These CFG pulses are used as comparison signal.</p>
41	Vcc (SERVO)	I	Vcc for servo circuit in the μ -COM.
42	Vcc (OSD)	I	Vcc for OSD circuit in the μ -COM.
43	CV IN	I	When the OSD display function is activated both video and text are present, when in the EE or PB modes.

Pin No.	Pin Name	I/O	Description
44	Vref (OSD)	—	GND.
45	CV OUT	O	The video signal is output to the RF modulator and line output jack.
46	CHAR BIAS	—	GND.
47	AFC LPF	I	Horizontal sync is used to lock the OSD.
48	AFC OSC		(Reduce Jitter)
49	Vss (OSD)	—	GND.
50	DOSC IN	I	OSD DOT CLOCK oscillator. (OSD character oscillator)
51	DOSC OUT	O	Determining the horizontal position (left or right) of OSD.
52	4fsc OUT	O	Oscillator for OSD Sync. signal.
53	4fsc IN	I	Generating a blue background.
54	COMPOSITE SYNC.	I	<ul style="list-style-type: none"> - Receives composite signal from Y/C circuit. - Separates V-sync and H-sync in the OSD internal block. - The sync signal determines the character position of OSD.
55	CTL GAIN ADJ	O	Level control for PB CTL. (to CTL control circuit)
56	SHC/MEC "H"	O	Y/C processing of Video signal at SCAM/MESECAM. (to Y/C)
57	CST IN	I	<ol style="list-style-type: none"> 1. Port to detect CST(cassette tape) switch input state. 2. With CST S/W input state, determines whether CST tape is inserted or not.
58	SCART "H"	O	SCART 8 pin level control to GND or 12V. (to SCART 1)
59	VIDEO Mute "H"	O	High "H" applied, turns on the OSD or POWER.
60	POWER CONTROL "H"	O	<ol style="list-style-type: none"> 1. A signal to switch voltages (5.3V, 12V) on/off which is controlled by the power key. 2. Outputs "H" in power On mode. Outputs "L" in power Off mode.
61	CAPSTAN REVERSE	O	A signal to control capstan motor's direction of rotation. "L" output = reverse direction. "H" output = forward direction.
62	AUDIO MUTE "H"	O	<ol style="list-style-type: none"> 1. Outputs "H" to mute audio signal in search mode and without sync signal. 2. Outputs "H" to eliminate pop noise generated in each mode during early switching point (Approx. 500ms) (EE/VV, TUNER/LINE, POWER ON/OFF, CH. UP/DOWN etc.)
63	TU SEC "H"	O	Now TUNER system is SECAM-L. (to TUNER)
64	16:9 "H"	O	SCART 8 pin level control to GND or 7V. (to SCART 1)
65	TSS "L"	O	Output chip enable signal for ACSS IC (IC5A1)
66	THER "H"	O	POWER switching of VPS I.C Vdd in POWER off state.
67	OPT RITC (CTL MON)	I	<ol style="list-style-type: none"> 1. Outputs "H" to mute <u>speakez</u>. 2. Outputs "H" to eliminate pop noise generated in <u>speakez</u>.
68	TEST (GND)	—	GND.
69	X-TAL 2	O	<ol style="list-style-type: none"> 1. 32.768 kHz oscillator is used as standard clock for clock display.
70	X-TAL 1	I	<ol style="list-style-type: none"> 2. When Vcc supplied, oscillation occurs.
71	Vss	—	μ -COM main ground.
72	OSC 1	I	<ol style="list-style-type: none"> 1. 10MHz oscillator is used to generate the standard clock used to operate the μ-COM.
73	OSC 2	O	<ol style="list-style-type: none"> 2. When Vcc is applied, Oscillation occurs. (But, when "L" is applied to pin 89 in power failure, Oscillation stops.)

Pin No.	Pin Name	I/O	Description					
74	MODE SW4	I	1. Port to detect the mechanism's position. 2. Deck and Mode SW Positions.					
75	MODE SW3		No.	MODE SW4	MODE SW3	MODE SW2	MODE SW1	DECK POSITION NAME
76	MODE SW2		1	L	H	L	H	RETURN
77	MODE SW1		2	L	L	L	H	EJECT
			3	L	L	H	L	ULC
			4	L	H	H	L	LOADING START
			5	H	H	L	L	LOADING END
			6	H	L	L	L	TUNE
			7	H	L	H	H	REV
			8	H	L	H	H	PLAY
			9	H	L	L	H	STOP
			10	H	H	L	H	FF, REW
			11	H	H	H	H	PASS
78	I-LIMIT	I	1. Input signal for stopping capstan motor. 2. When this port inputs "L", the capstan motor stops.					
79	REC "H"	O	1. When REC mode is operating normally, outputs "H". 2. Switched to REC mode by operating audio, Y/C pre-amp. 3. Outputs "H" and record audio, video signals on the tape.					
80	CAP ACCEL "H"	O	Pulse output to control capstan motor in slow mode.					
81	DRUM ADJ	O	Pulse output to control drum motor in slow mode.					
82	R/C	I	1. This pin receives remote data through RC901, which amplifies and detects the R/C signal. 2. After input signal is decoded in u-COM (IC501), and performs related key operation.					
83	NC	-	Not connect					
84	NC							
85	NC							
86	NC							
87	COMPOSITE SYNC. (INV)	I	1. Input C-Sync (composite sync) to confirm whether video signal is present or not. 2. Confirms by counting 1H (63.5μsec) horizontal sync for a fixed time period.					
88	STAND BY "H"	O	Power switching of DIGITRON in 3W mode.					



Pin No.	Pin Name	I/O	Description
89	POWER FAIL	I	<p>1. When a power failure is detected, this pin goes "L" and the following sequence of events occurs.</p> <p>2. Power failure detector timing sequence.</p> 
90	IIC	O	A reference CLOCK for Hi-Fi, TU/IF, MTS, SPEAKER
91	IIC	O	A reference DATA for Hi-Fi, TU/IF, MTS, SPEAKER
92, 93	NC	–	Not connect
94	FLD ENABLE	O	Outputs chip enable signal for FLD Drive IC (IC5F1).
95	FLD CLOCK	O	Outputs clock signal to operate FLD Drive IC (IC5F1).
96	FLD DATA IN	I	Serial interface signals for FLD Drive IC control.
97	FLD DATA OUT	O	
98 ~ 100	NC	O	Not connect

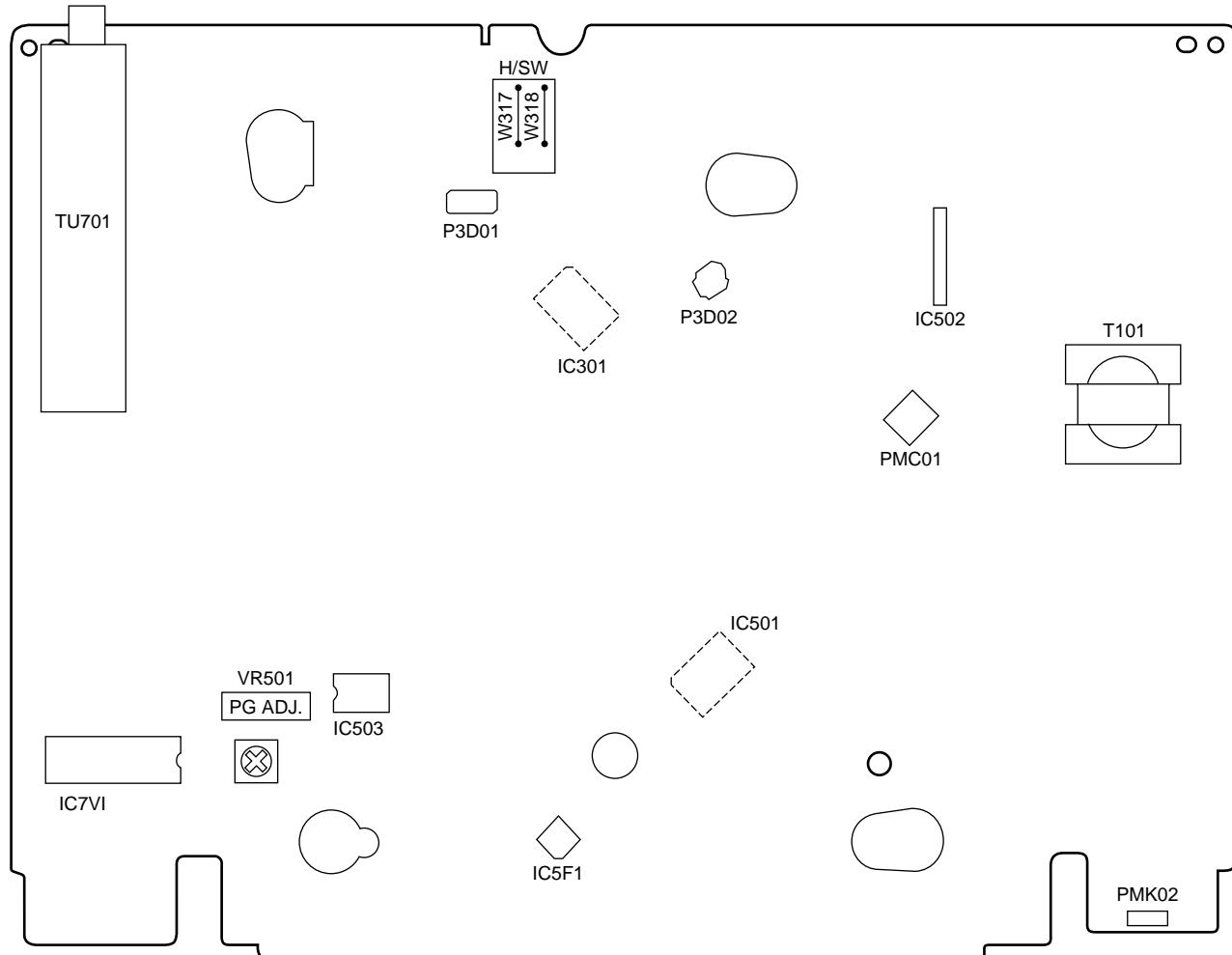
ADJUSTMENT

Test Equipment

- Oscilloscope
- AC Millivolt Meter
- Test Tape
- TTV-P1

Adjustment Location

A MAIN C.B (TOP VIEW)



1. Servo Adjustment

1) PG Adjustment

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY (TTV-P1)	VIDEO OUT H/SW (W317, W318)	VR501	$6.5 \pm 0.5H$

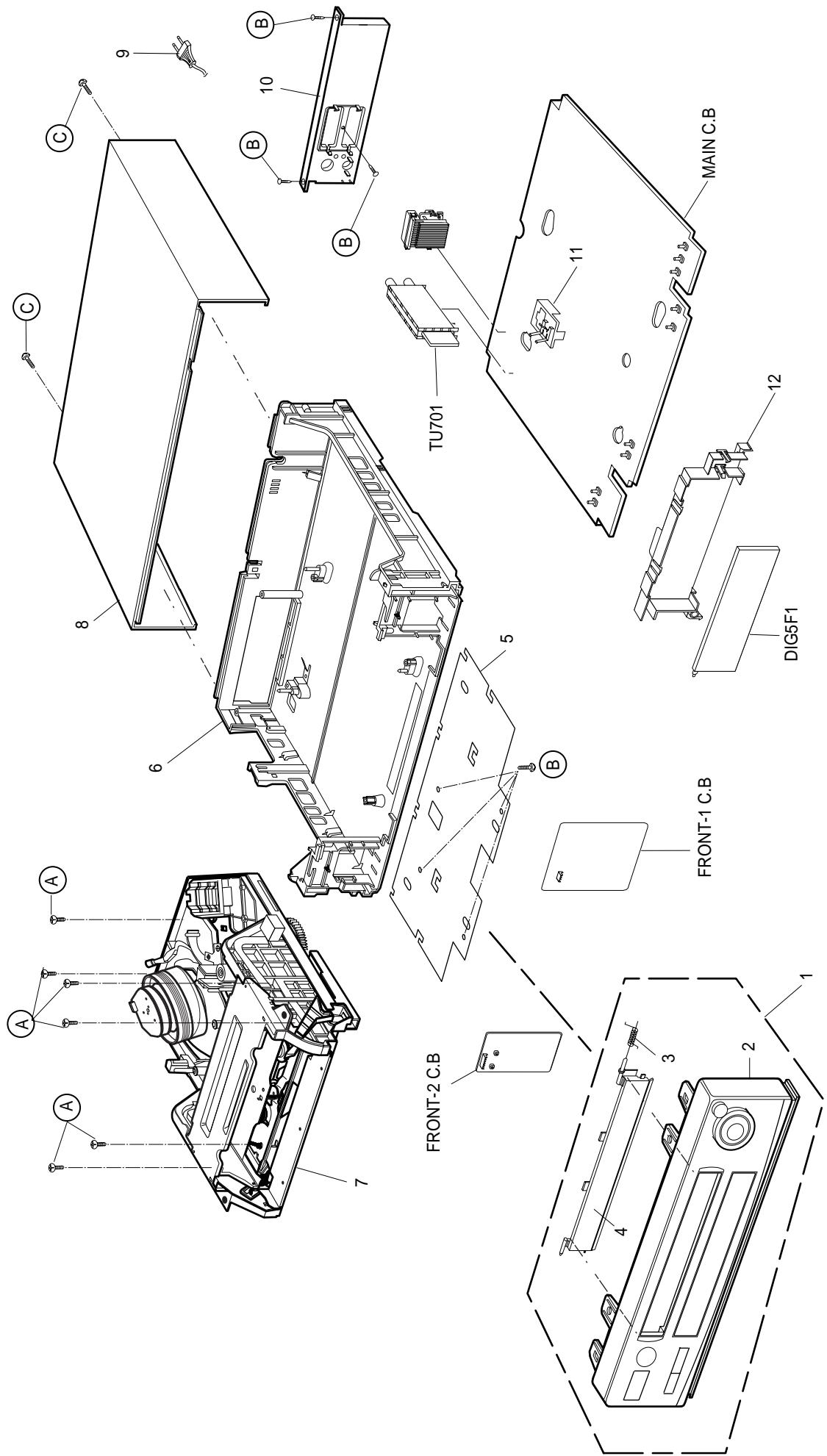
• Adjustment Procedure

1. Insert the PAL SP Test Tape (TTV-P1) and play.
Note - Adjust the distance of X, pressing the Tracking(+) or Tracking(-) when the "ATR" is blink after the PAL SP Test Tape is inserted.
2. Connect the CH1 of the oscilloscope to the H/SW (W317, 318) and CH2 to the Video Out for the VCR.
3. Trigger the mixed Video Signal of CH2 to the CH1 H.SW (W317, W318), and then check the distance (time difference), which is from the selected A(B) Head point of the H.SW(W317, W318) signal to the starting point of the vertical synchronized signal, to $6.5H \pm 0.5H$ ($412\mu s$, $1H=63.5\mu s$).

• WAVEFORM

The diagram illustrates the timing relationship between the H/SW signal and the Composite VIDEO signal. The H/SW signal is a rectangular pulse. The Composite VIDEO signal is a composite signal with vertical sync pulses. A horizontal dashed line marks the H/SW signal, and a vertical dashed line marks the Composite VIDEO signal. A double-headed arrow between these lines indicates a time interval of $6.5H(412\mu s)$.

MECHANICAL EXPLODED VIEW 1/1



MECHANICAL MAIN PARTS LIST 1/1

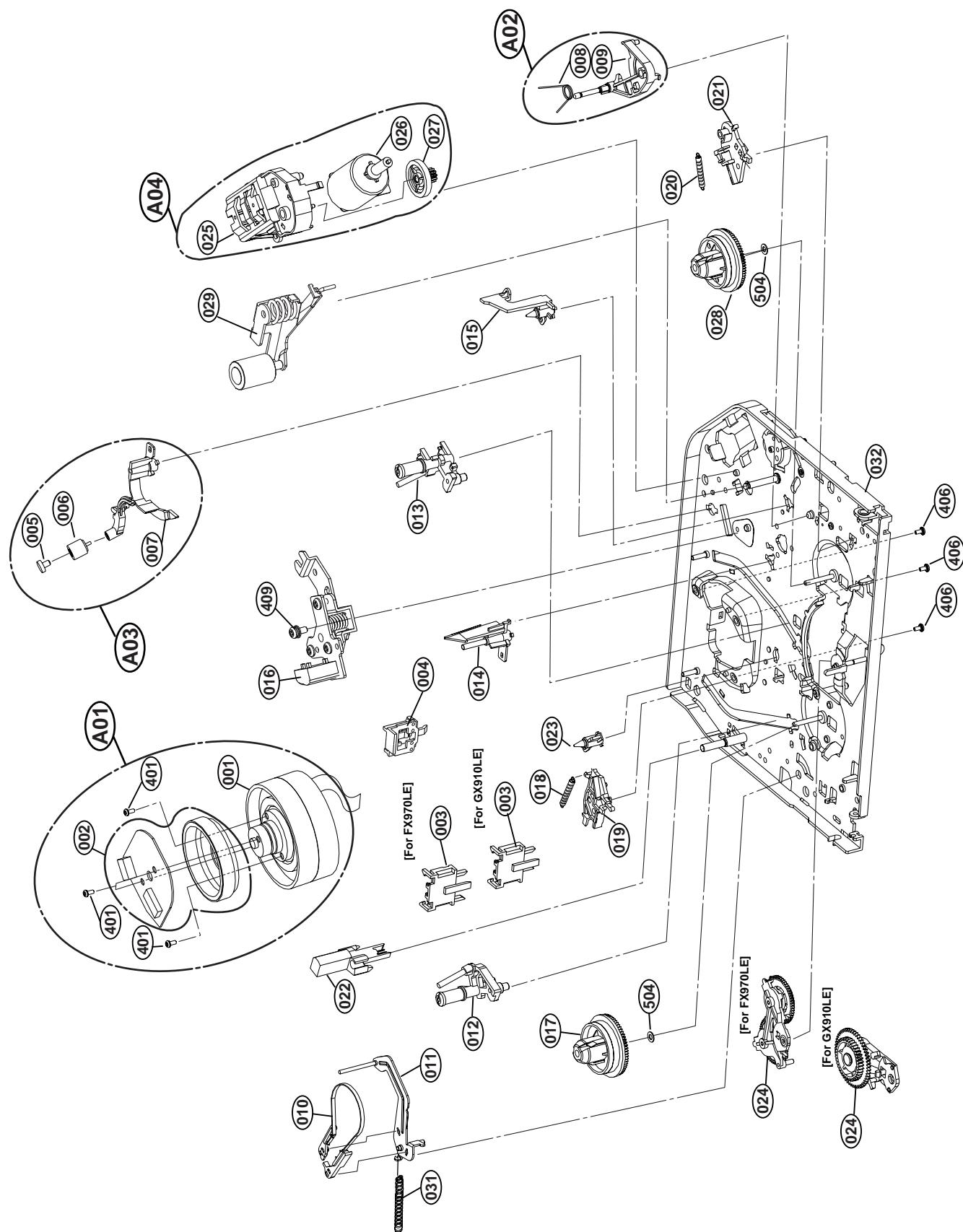
DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
001	S7-21R-F09-4B0		PANEL ASSY FRONT<970LEK>
001	S7-21R-F09-4C0		PANEL ASSY FRONT<910LEK>
002	—		PANEL FRONT(HV-FX970L)
003	S4-426-81A-000		SPR,DOOR
004	S5-80R-003-3E0		DOOR CST<910LEK>
004	S5-80R-003-3C0		DOOR CST<970LEK>
005	S5-50R-021-0A0		COVER BOTTOM
006	S2-10R-002-3D0		FRAME MAIN
007	—		DECK ASSY D33 4HD
008	S1-10R-012-8K0		CASE TOP
▲			
009	S4-10R-CHD-01A		POWER CORD
010	S7-21R-D02-3K0		PANEL ASSY DISTRIBUTOR
011	S1-11R-008-9B0		CASE ASSY
012	S9-30R-013-3A0		HOLDER DIGITRON
A	87-741-097-410		SCREW, 3-12
B	S3-530-51A-000		SCREW, SPECIAL
C	S3-531-36A-000		SCREW, SPECIAL(FBK)

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

MECHANISM EXPLODED VIEW 1/3

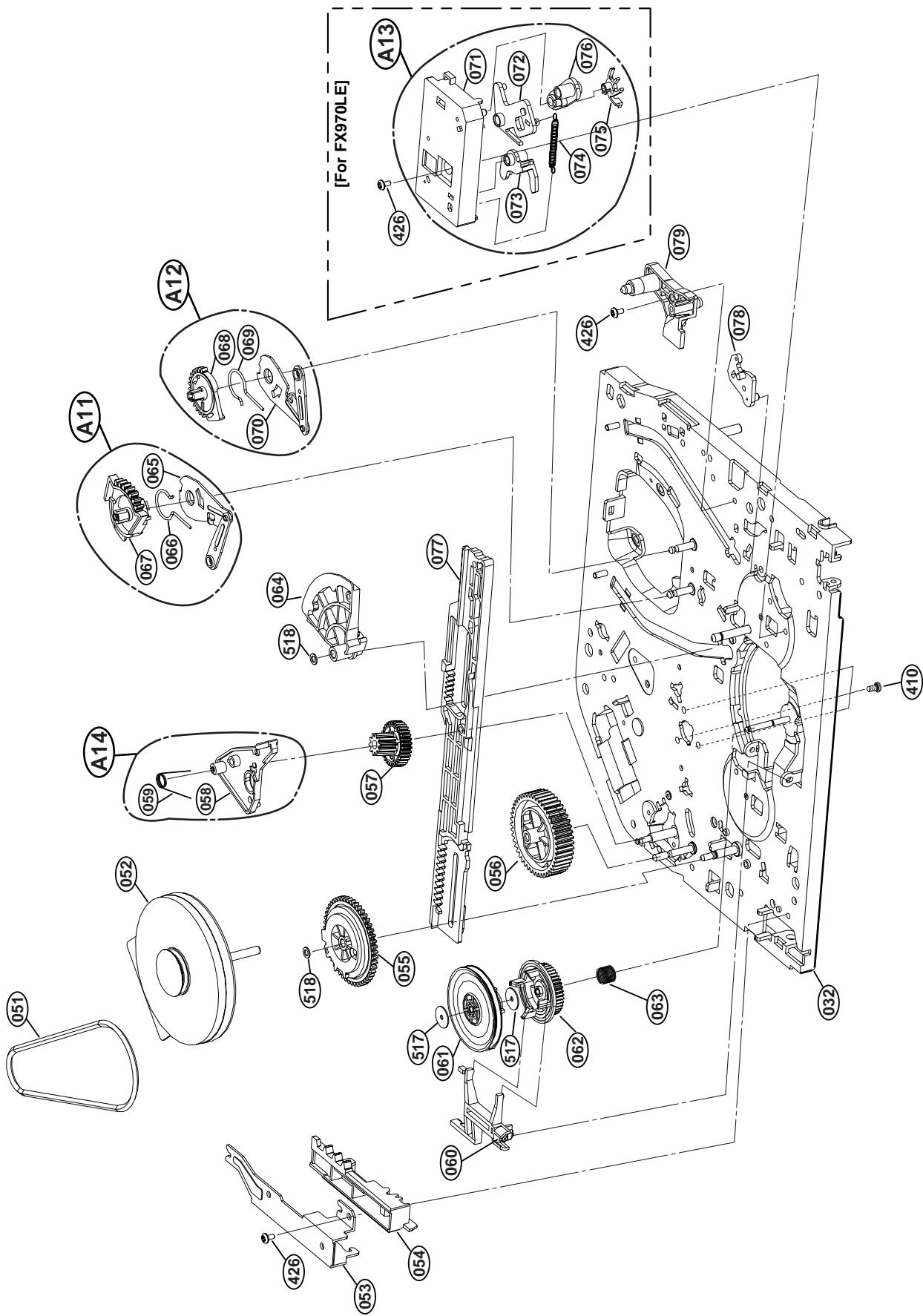


MECHANISM MAIN PARTS LIST 1/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
001	S7-23R-010-5D0		DRUM ASSY SUB D33	024	S2-61R-000-9A0		ARM ASSY IDLER-J<970LEK>
002	S6-80R-B00-04A		MOTOR(MECH)	025	S8-10R-005-3A0		BRACKET L/D MOTOR
003	S9-30R-010-7A0		HOLDER FPC<970LEK>	026	S6-81R-000-7A0		MOTOR ASSY L/D
003	S9-30R-010-6A0		HOLDER FPC<910LEK>	027	S4-70R-002-5A0		GEAR WHEEL
004	S0-06R-001-4A0		CAP,FPC	028	S4-08R-000-2A0		REEL T
005	—		CAP,A CLEANER	029	S2-61R-001-1A0		ARM ASSY PINCH
006	—		ROLLER CLEANER	031	S9-70R-005-2A0		SPRING TENSION
007	—		ARM CLEANER	032	S1-41R-000-2A0		CHASSIS ASSY
008	S9-70R-004-3A0		SPRING T/UP	401	87-261-071-410		PAN HEAD SCREW 2.6-4
009	S2-60R-001-1A0		ARM T/UP	406	87-261-094-410		PAN HEAD SCREW 3-6
010	S7-70R-000-4A0		BAND ASSY TENSION(MECH)	409	87-741-095-410		SCREW,PAN HEAD 3.0-8.0
011	S2-61R-000-4A0		ARM ASSY TENSION	504	S3-540-01B-000		WASHER,P.S 3.1-6-0.5
012	S0-41R-000-3A0		BASE ASSY P2	A01	—		DRUM ASSY D33
013	S0-41R-000-4A0		BASE ASSY P3	A01	—		DRUM(CIRC) ASSY D33-4CH
014	S0-41R-000-7A0		BASE ASSY P4	A02	—		ARM ASSY
015	S8-70R-000-1A0		OPENER LID	A03	S2-61R-000-3A0		ARM ASSY CLEANER
016	S0-41R-000-5A0		BASE ASSY A/C HEAD	A04	—		BRACKET ASSY L/D MOTOR
017	S4-08R-000-1A0		REEL S				
018	S9-70R-005-4A0		SPRING SB				
019	S4-21R-000-3A0		BRAKE ASSY S				
020	S9-70R-005-3A0		SPRING TB				
021	S4-21R-000-4A0		BRAKE ASSY T				
022	S5-238-33B-000		HEAD FE D33				
023	S9-80R-001-0A0		SUPPORTER CST				
024	S2-61R-000-8A0		ARM ASSY IDLER-J<910LEK>				

MECHANISM EXPLODED VIEW 2/3

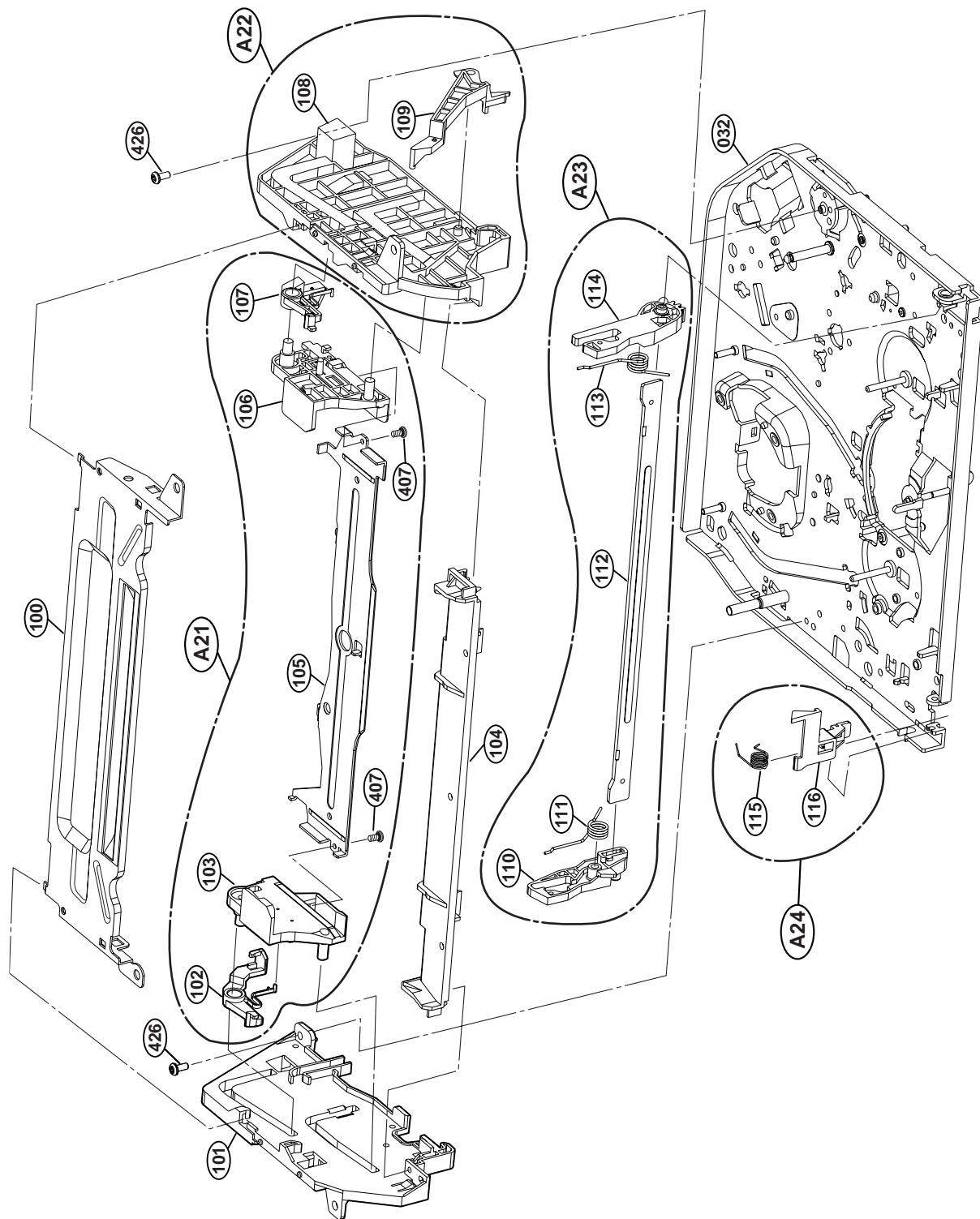


MECHANISM MAIN PARTS LIST 2/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
032	S1-41R-000-2A0		CHASSIS ASSY	070	—		LEVER P2
051	S4-00R-000-5A0		BELT CAPSTAN	071	—		BRACKET JOG<970LEK>
052	S6-80R-A00-03A		MOTOR(MECH)	072	—		LEVER JOG<970LEK>
053	S9-74R-001-8A0		GUIDE RACK F/L	073	—		LEVER SLOW<970LEK>
054	S4-70R-003-7A0		GEAR RACK F/L	074	S9-70R-004-9A0		SPRING JOG<970LEK>
055	S4-70R-003-3A0		GEAR DRIVE	075	—		GEAR JOG<970LEK>
056	S4-70R-003-2A0		GEAR CAM	076	—		ARM JOG<970LEK>
057	S4-70R-003-6B0		GEAR CONNECT	077	S3-00R-015-7A0		PLATE SLIDER
058	—		BRAKE CAPSTAN	078	S5-10R-002-2A0		LEVER TENSION
059	S9-70R-005-9A0		SPRING CAPSTAN	079	S0-40R-001-8A0		BASE TENSION
060	S5-10R-002-5A0		LEVER F/R	410	SA-PF0-262-218		SCREW, PAN HEAD 2.6-6.8
061	S2-65R-000-2A0		CLUTCH ASSY	426	87-261-094-410		PAN HEAD SCREW 3-6
062	S4-70R-004-4A0		GEAR ASSY UP/D	517	SW-ZZR-000-4B0		WASHER STOPPER
063	S9-70R-005-1A0		SPRING UP/D	518	SW-ZZR-000-4A0		WASHER STOPPER
064	S4-70R-003-4A0		GEAR SECTOR	A11	S4-70R-002-8A0		GEAR ASSY P3
065	—		LEVER P3	A12	S4-70R-002-6A0		GEAR ASSY P2
066	—		SPRING L/D	A13	S8-11R-001-2A0		BRACKET ASSY JOG
067	—		GEAR P3	A14	—		BRACKET ASSY CAPSTAN
068	—		GEAR P2				
069	—		SPRING L/D				

MECHANISM EXPLODED VIEW 3/3



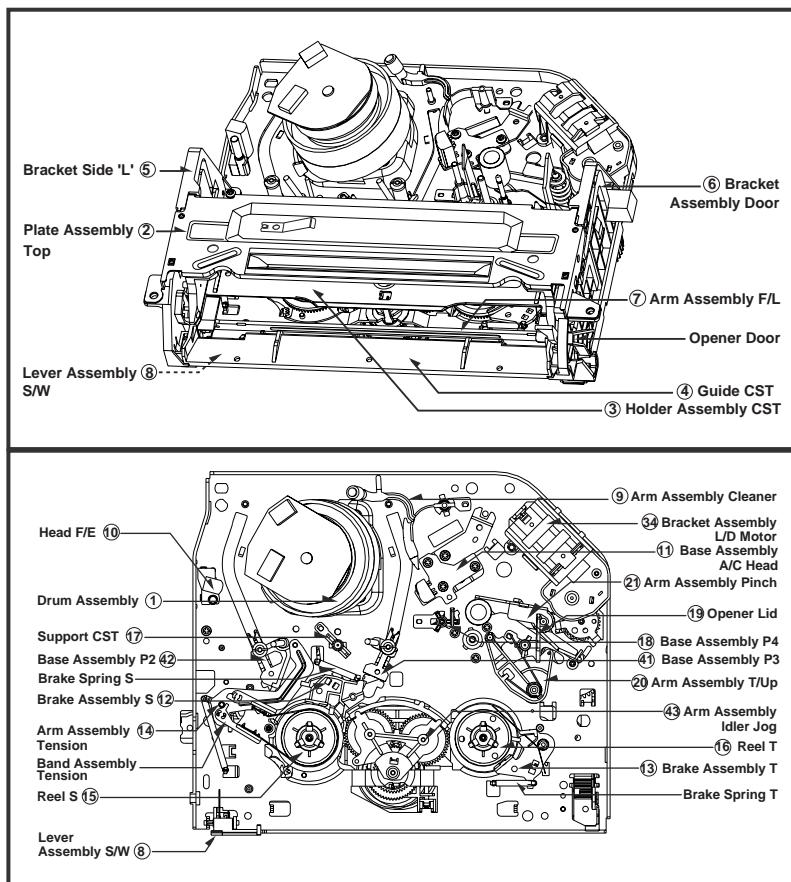
MECHANISM MAIN PARTS LIST 3/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
032	S1-41R-000-2A0		CHASSIS ASSY	114	—		ARM F/L(R)
100	S3-01R-002-9A0		PLATE ASSY TOP	115	S9-70R-005-0A0		SPRING SWITCH
101	S8-10R-005-6A0		BRACKET SIDE(L)	116	S5-10R-002-0A0		LEVER SWITCH
102	—		LEVER STOPPER(L)	407	87-841-034-210		SCREW PAN HEAD 2.0-5.0
103	—		HOLDER SIDE(L)	426	87-261-094-410		PAN HEAD SCREW 3-6
104	S9-74R-001-9A0		GUIDE CST	A21	S9-31R-001-5A0		HOLDER ASSY CST
105	—		HOLDER CST	A22	S8-11R-001-4A0		BRACKET ASSY
106	—		HOLDER SIDE(R)	A23	S2-61R-001-0A0		ARM ASSY F/L
107	—		LEVER STOPPER(R)	A24	—		LEVER ASSY SWITCH
108	—		BRACKET SIDE(R)				
109	—		OPENER DOOR				
110	—		ARM F/L(L)				
111	—		SPRING F/L(L)				
112	—		BODY F/L				
113	—		SPRING F/L(R)				

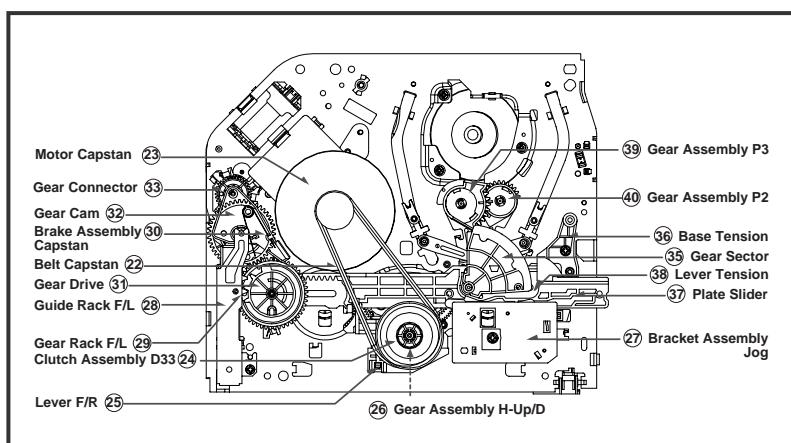
DECK MECHANISM PARTS LOCATIONS

• Top View



Procedure Starting No.	Part	Fixing Type	Figure
1	Drum Assembly	3 Screws , Cap FPC	A-1
2	Plate Assembly Top	Two Hooks	A-2
3	Holder Assembly CST	Chassis Hole	A-2
4	Guide CST	2 Hooks	A-2
5	Bracket Side (L)	1 Screw	A-2
6	Bracket Assembly Door	1 Screw	A-2
7	Arm Assembly F/L	Chassis Hole	A-2
8	Lever Assembly S/W	Chassis Hole	A-2
9	Arm Assembly Cleaner	Chassis Embossing	A-3
10	Head F/E	2 Hooks	A-3
11	Base Assembly A/C Head	1 Screw	A-3
12	Brake Assembly S	Chassis Hole	A-4
13	Brake Assembly T	Chassis Hole	A-4
14	Arm Assembly Tension	Chassis Hole	A-4
15	Reel S	Chassis Shaft	A-4
16	Reel T	Chassis Shaft	A-4
17	Support CST	Chassis Embossing	A-5
18	Base Assembly P4	Chassis Embossing	A-5
19	Opener Lid	Chassis Embossing	A-5
20	Arm Assembly T/Up	Chassis Embossing	A-5
21	Arm Assembly Pinch	Chassis Shaft	A-5

• Bottom View



Procedure Starting No.	Part	Fixing Type	Figure
22	Belt Capstan	3 Screws	A-6
23	Motor Capstan	1 Washer	A-6
24	Clutch Assembly D33	2 Washers	A-6
25	Lever F/R	1 Hook	A-6
26	Gear Assembly H-Up/D	1 Screw	A-7
27	Bracket Assembly Jog	1 Screw	A-7
28	Guide Rack F/L	1 Screw	A-7
29	Gear Rack F/L	1 Washer	A-7
30	Brake Assembly Capstan	Chassis Shaft	A-7
31	Gear Drive	1 Washer	A-8
32	Gear Cam	Chassis Shaft	A-8
33	Gear Connector	Chassis Shaft	A-8
34	Bracket Assembly L/D Motor	3 Hooks	A-8
35	Gear Sector	3 Washers	A-9
36	Base Tension	1 Screw	A-9
37	Plate Slider	Chassis Shaft	A-9
22, 24, 25, 27			
28, 29, 31, 35			
36			
22, 24, 25, 27			
28, 29, 31, 35			
38	Lever Tension	Chassis Hole	A-9
36			
35	39	2 Hooks	A-10
35, 39	40	2 Hooks	A-10
35, 39, 40	41	Chassis Hole	A-10
35, 39, 40, 41	42	Chassis Hole	A-10
1, 2	43	1 Hook	A-10

NOTE : When reassembly perform the procedure in the reverse order.

- 1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Refer to Page 4-14)
- 2) When disassembling, the Parts for Starting No. Should be removed first.

DECK MECHANISM DISASSEMBLY

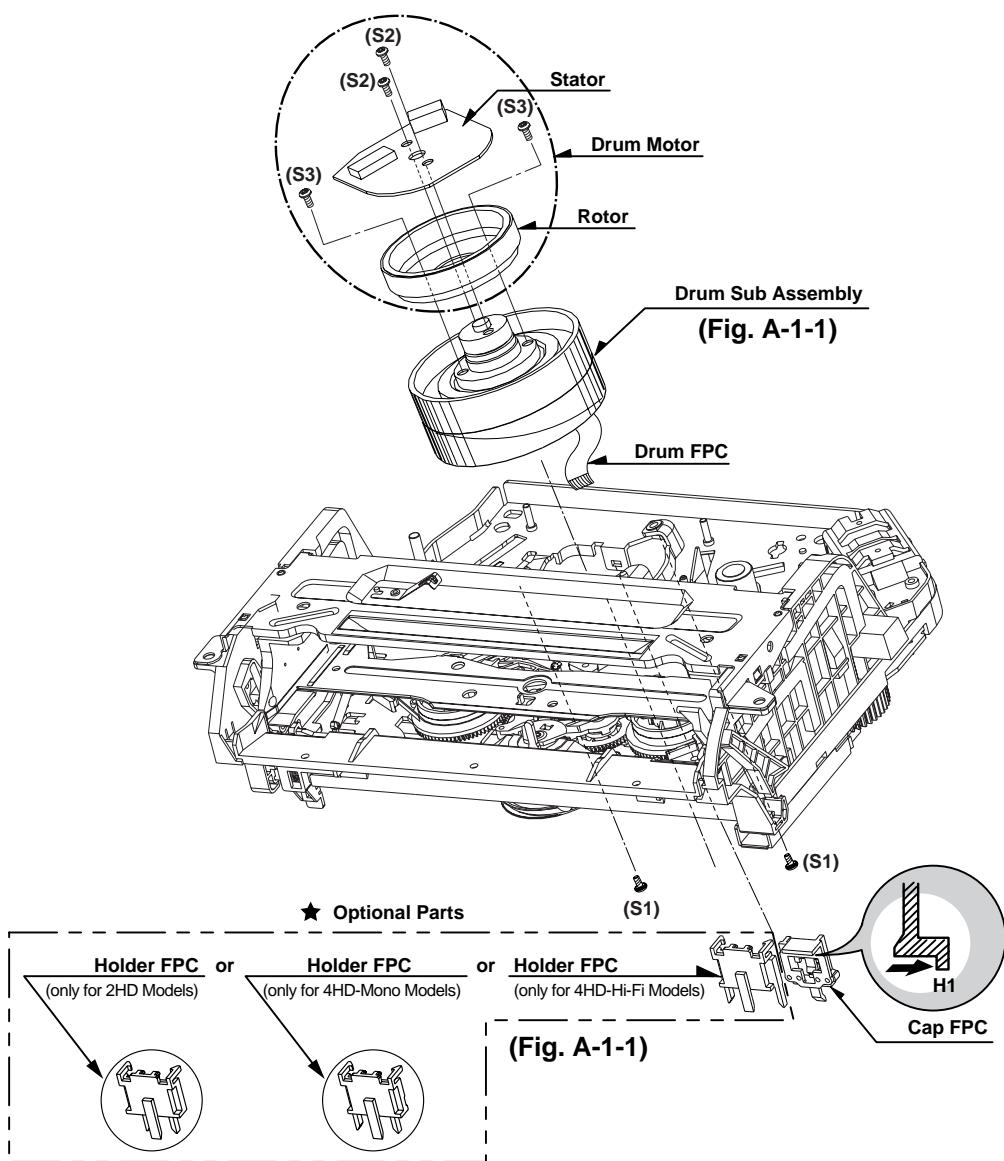


Fig. A-1

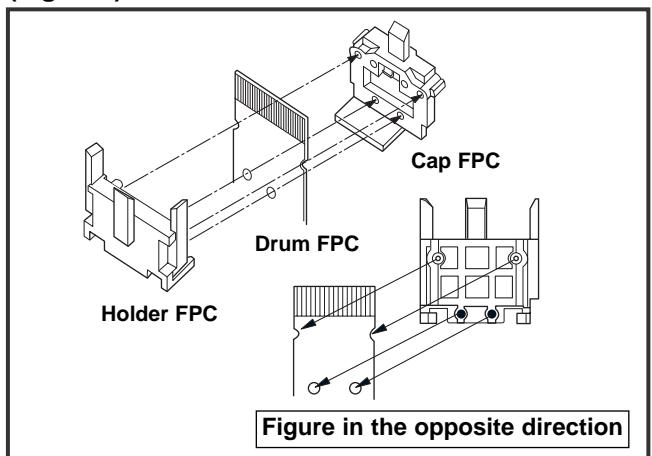
1. Drum Assembly (Fig. A-1-1)

- 1) Unhook the (H1) on the back side of the Chassis and separate the Cap FPC.
- 2) Remove three Screws (S1) and lift up the Drum Assembly.
- 3) Remove two Screws (S2) and Separate the Stator of Drum Motor.
- 4) Remove two Screws (S3) and Separate the Rotor of Drum Motor from the Drum Sub Assembly.

NOTE

- (1) When reassembling Cap FPC, two Holes of Drum FPC are inserted to the two Bosses of Holder FPC correctly. (Refer to Fig. B-1)

(Fig. B-1)



DECK MECHANISM DISASSEMBLY

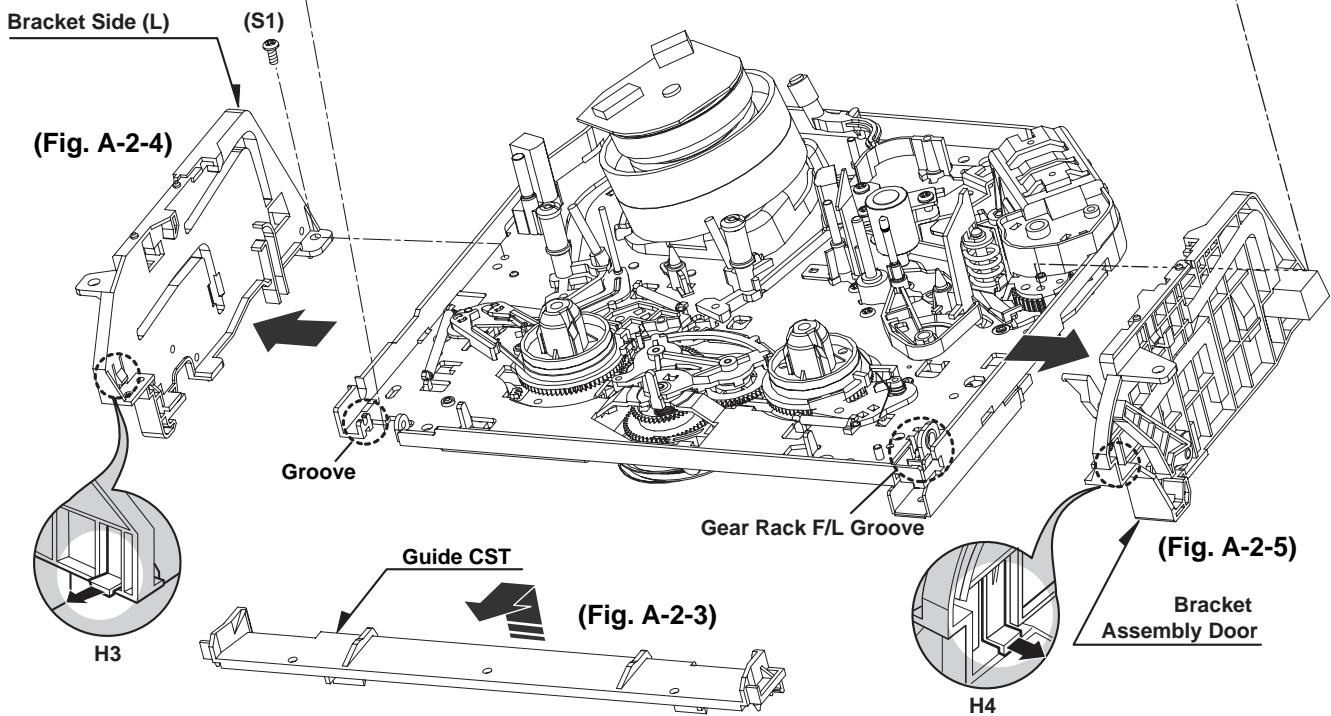
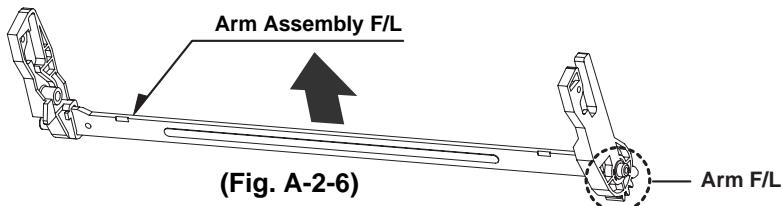
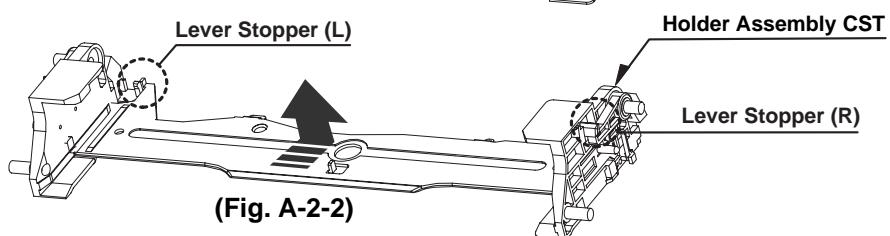
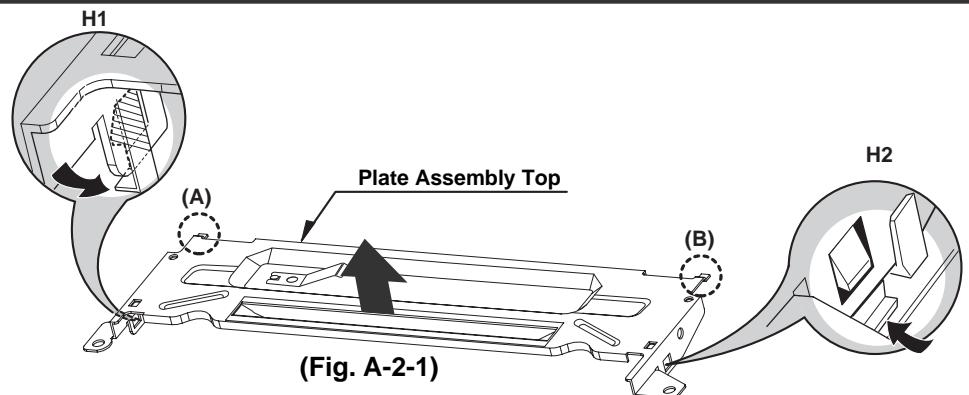


Fig. A-2

DECK MECHANISM DISASSEMBLY

2. Plate Assembly Top (Fig. A-2-1)

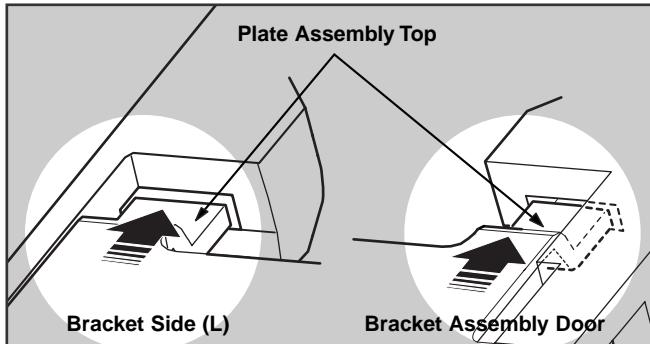
- 1) Unhook the (H1) and separate the Left Side.
- 2) Unhook the (H2) and lift up the Plate Assembly Top.

NOTE

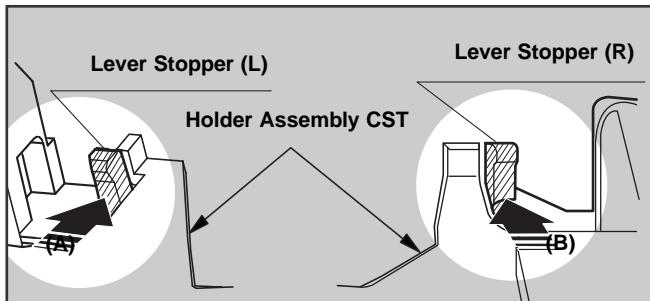
(1) When reassembling, confirm (A),(B) Part of the Plate Assembly Top is inserted to the (L),(R) Grooves of the Bracket Side(L) and Bracket Assembly Door.

3. Holder Assembly CST (Fig. A-2-2)

- 1) Push the Lever Stopper(L),(R) in the direction of the arrows (A), (B), and move the Holder Assembly CST.

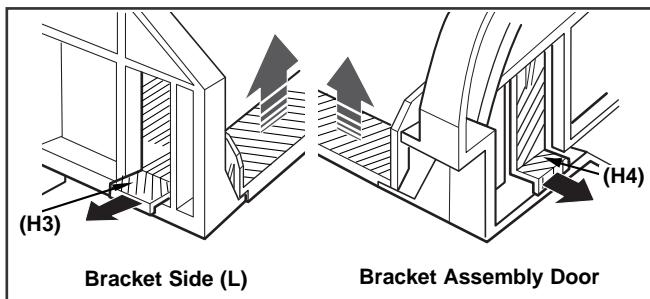


- 2) Push the Bracket Assembly Door to the right and lift up the Holder Assembly CST along the Guide Groove of the Bracket Assembly Door.



4. Guide CST (Fig. A-2-3)

- 1) Push two Hooks(H3),(H4) in the direction of the arrow and separate the left side.
- 2) Unhook (H5),(H6) as above No.1) and disassemble the Guide CST in the direction of the arrow.



5. Bracket Side(L) (Fig. A-2-4)/ Bracket Assembly Door (Fig. A-2-5)

- 1) Remove the Screw (S1) and disassemble the Bracket Side(L) in the front.

- 2) Remove the Screw (S2) and disassemble the Bracket Assembly Door in the front.

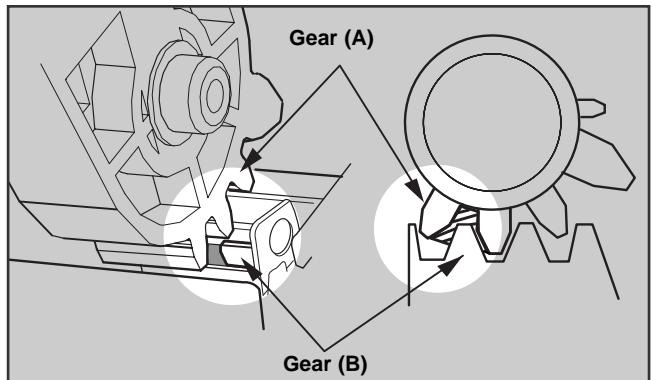
6. Arm Assembly F/L (Fig. A-2-6)

- 1) Push the Arm Assembly F/L to the left and lift up it.

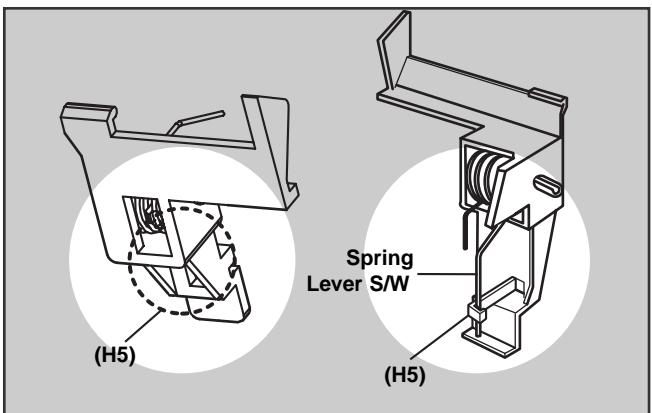
NOTE

(1) When reassembling, confirm that the Gear(A) of the Arm F/L and the Gear(B) of the Gear Rack F/L are assembled as below.

7. Lever Assembly S/W (Fig. A-2-7)

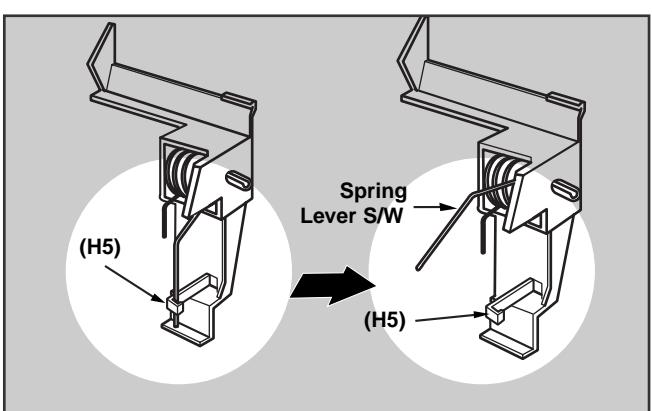


- 1) Hook the Spring Lever S/W on (H5).
- 2) Lift up the left side of the Lever S/W from the Groove(A) of the Chassis.



NOTE

(1) Place the Spring Lever S/W of the above (No.1) as original position.



DECK MECHANISM DISASSEMBLY

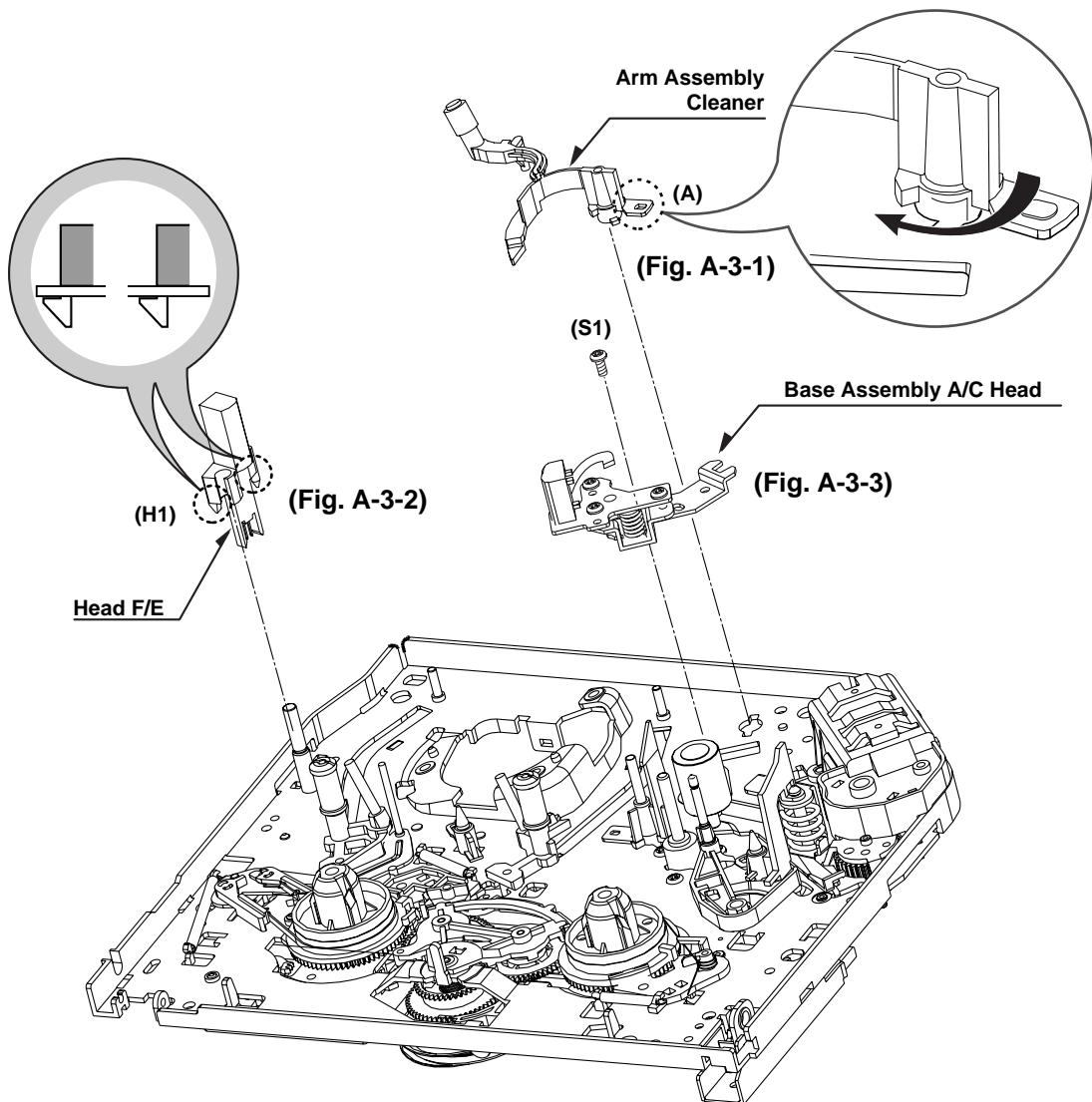


Fig. A-3

8. Arm Assembly Cleaner(Fig. A-3-1)

- 1) Break away the (A) part shown above Fig. A-3-1 from the Embossing of the Chassis in the clockwise direction and lift up the Arm Assembly Cleaner.

9. Head F/E (Fig. A-3-2)

- 1) Unhook the two Hooks (H1) on the back side of the Chassis and lift up the Head F/E.

10. Base Assembly A/C Head (Fig. A-3-3)

- 1) Remove the Screw (S1) and lift up the Base Assembly A/C Head.

DECK MECHANISM DISASSEMBLY

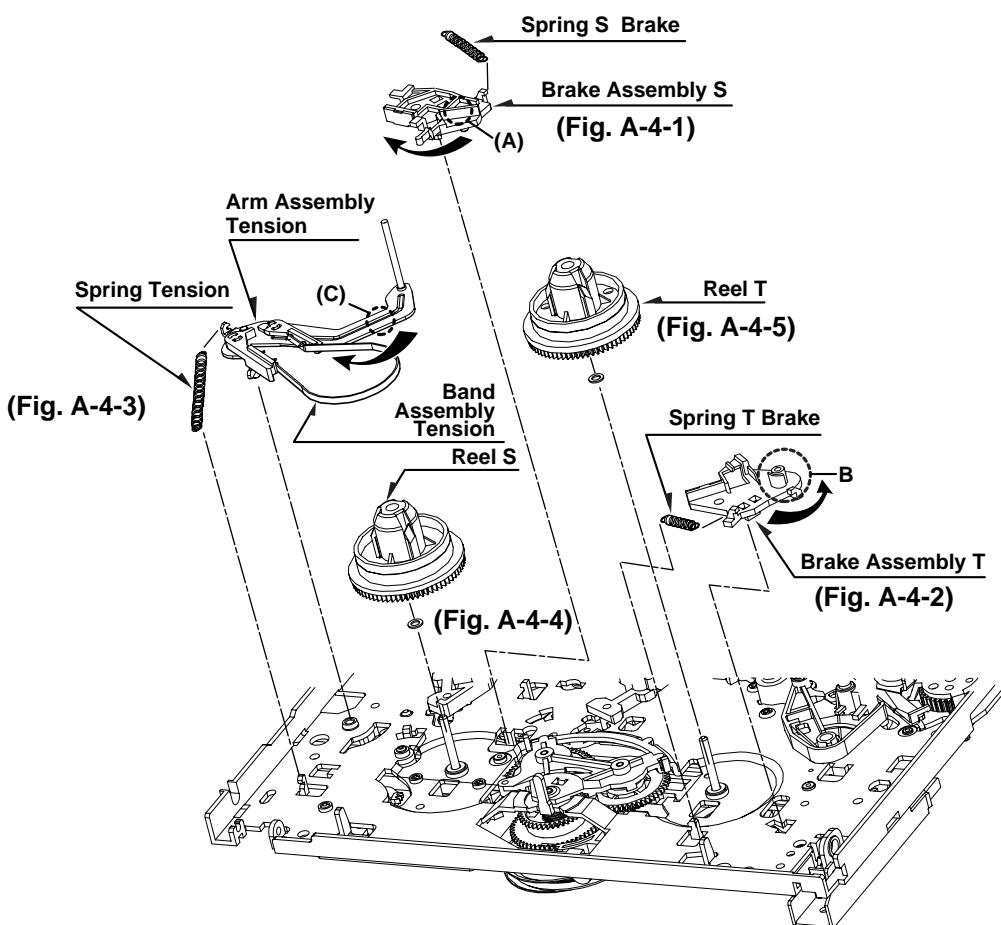


Fig. A-4

11. Brake Assembly S (Fig. A-4-1)

- 1) Remove the Spring S Brake.
- 2) Hold the (A) part shown above Fig. A-4-1 and turn to the clockwise direction, and then lift up the Brake Assembly S.

NOTE

- (1) When reassembling, be careful not to change the Spring with below No.11,12.(Refer to Fig. B-2).

12. Brake Assembly T (Fig. A-4-2)

- 1) Remove the Spring T Brake.
- 2) Hold the (B) part shown above Fig. A-4-2 and turn to the counterclockwise direction, and then lift up the Brake Assembly T.

NOTE

- (1) When reassembling, be careful not to change the Spring with above No.11.(Refer to Fig. B-2).

(Difference for Springs) (Fig. B-2)

	Spring T Brake Color (Black)
	Spring S Brake
	Spring Tension

13. Arm Assembly Tension (Fig. A-4-3)

- 1) Remove the Spring Tension.
- 2) Hold the (C) part shown above Fig. A-4-3 and turn to the clockwise direction, and then lift up the Arm Assembly Tension.

NOTE

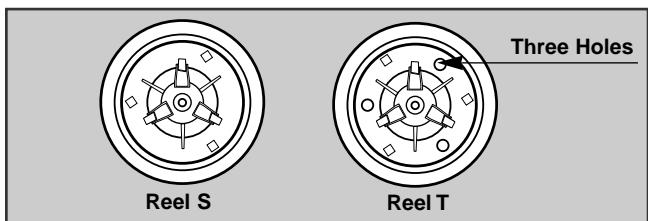
- (1) When reassembling, be careful not to change the Spring with above No.11,12.(Refer to Fig. B-2).

14. Reel S (Fig. A-4-4) & Reel T (Fig. A-4-5)

- 1) Lift up the Reel S and Reel T.

NOTE

- (1) When reassembling, be careful not to change the Reel S and Reel T each other.



- (2) Confirm two Slide Washers under the Reel S and Reel T.

DECK MECHANISM DISASSEMBLY

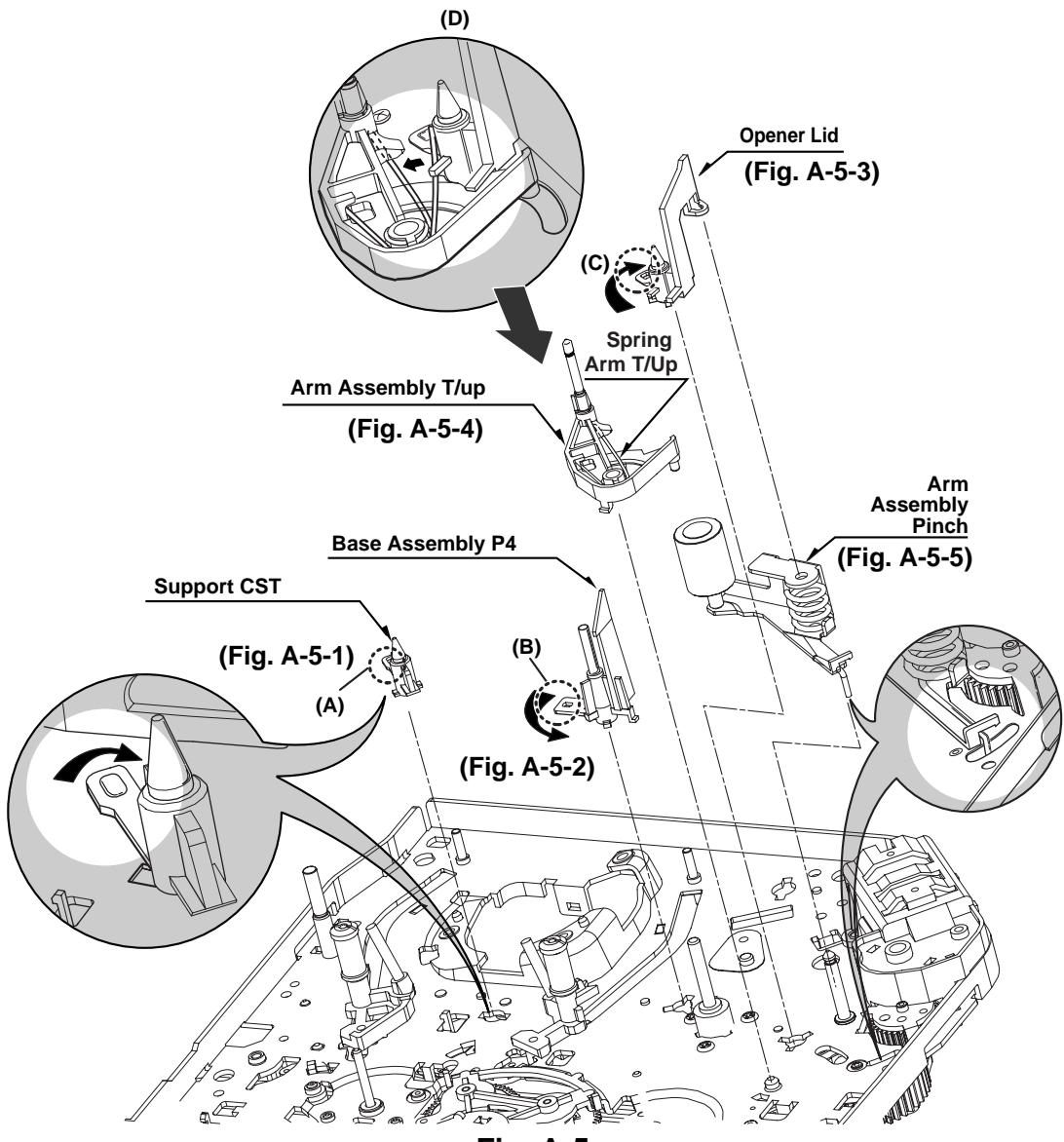


Fig. A-5

15. Support CST (Fig. A-5-1)

- 1) Break away the (A) part shown above Fig. A-5-1 from the Embossing of the Chassis in the clockwise direction, and lift up the Support CST.

16. Base Assembly P4 (Fig. A-5-2)

- 1) Break away the (B) part shown above Fig. A-5-2 from the Embossing of the Chassis in the counterclockwise direction and lift up the Base Assembly P4.

17. Opener Lid (Fig. A-5-3)

- 1) Hook the Spring Arm T/up on the Split digged under the Arm Assembly T/up.(Refer to Fig.A-5-4(D)).
- 2) Break away the (C) Part of the Opener Lid from the Embossing of the Chassis in the Clockwise direction and lift up the Opener Lid.

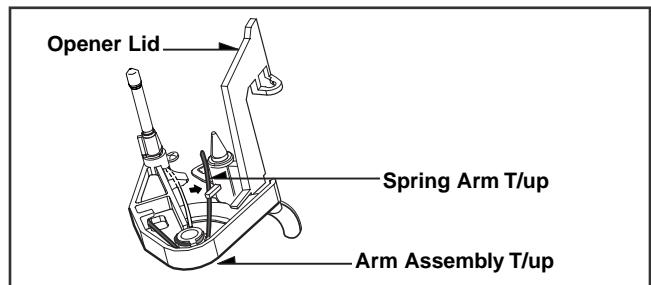
18. Arm Assembly T/up (Fig. A-5-4)

- 1) Confirm that the Spring Arm T/up is placed as above (No.17.1).

- 2) Lift up the Arm Assembly T/up.

NOTE

- (1) When reassembling, unhook the Spring Arm T/up Shown above (No.17.1) to the original position.



19. Arm Assembly Pinch (Fig. A-5-5)

- 1) Lift up the Arm Assembly Pinch.

DECK MECHANISM DISASSEMBLY

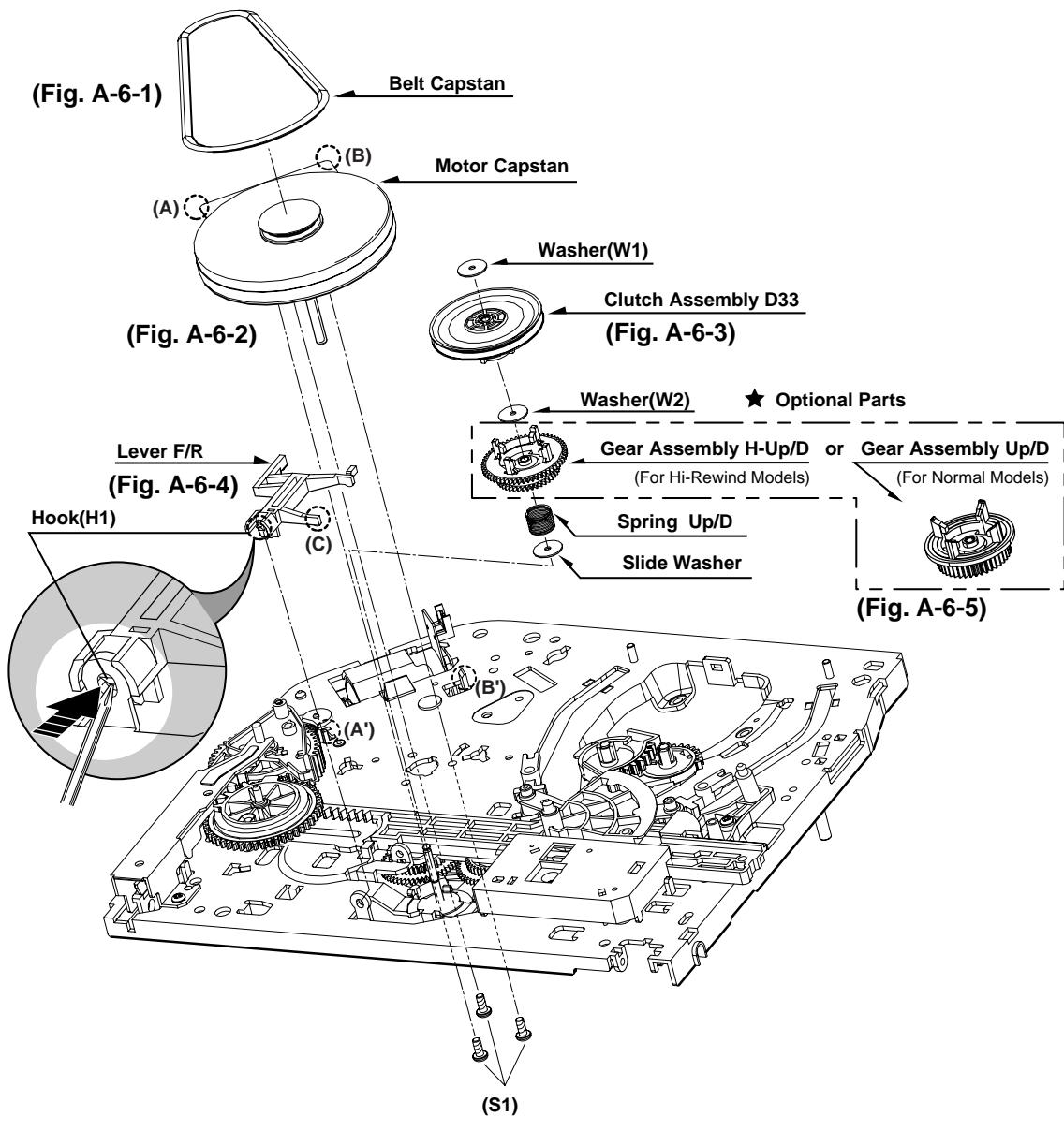


Fig. A-6

20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

- 1) Remove the Belt Capstan.
- 2) Remove three Screws(S1) on the back side of the Chassis and lift up the Motor Capstan.

NOTE

- (1) When reassembling, Confirm the (A), (B) parts of Motor Capstan is located to the (A'), (B') of the Chassis.

21. Clutch Assembly D33 (Fig. A-6-3)

- 1) Remove the Washer(W1) and lift up the Clutch Assembly D33.

22. Lever F/R (Fig. A-6-4)

- 1) Unhook the (H1) shown above Fig. A-6-4 and lift up the Lever F/R.

NOTE

- (1) When reassembling, move the (C) part of the Lever F/R up and down, then confirm if it is returned to original position.

23. Gear Assembly H-Up/D or Gear Assembly Up/D (Fig. A-6-5)

- 1) Remove the Washer(W2) and lift up the Gear Assembly H-up/D.
- 2) Remove the Spring Up/D.
- 3) Remove the Slide Washer.

NOTE

- (1) Gear Assembly H-Up/D is for Hi-Rewind Models.
- (2) Gear Assembly Up/D is for Normal Models except Hi-Rewind Models.

DECK MECHANISM DISASSEMBLY

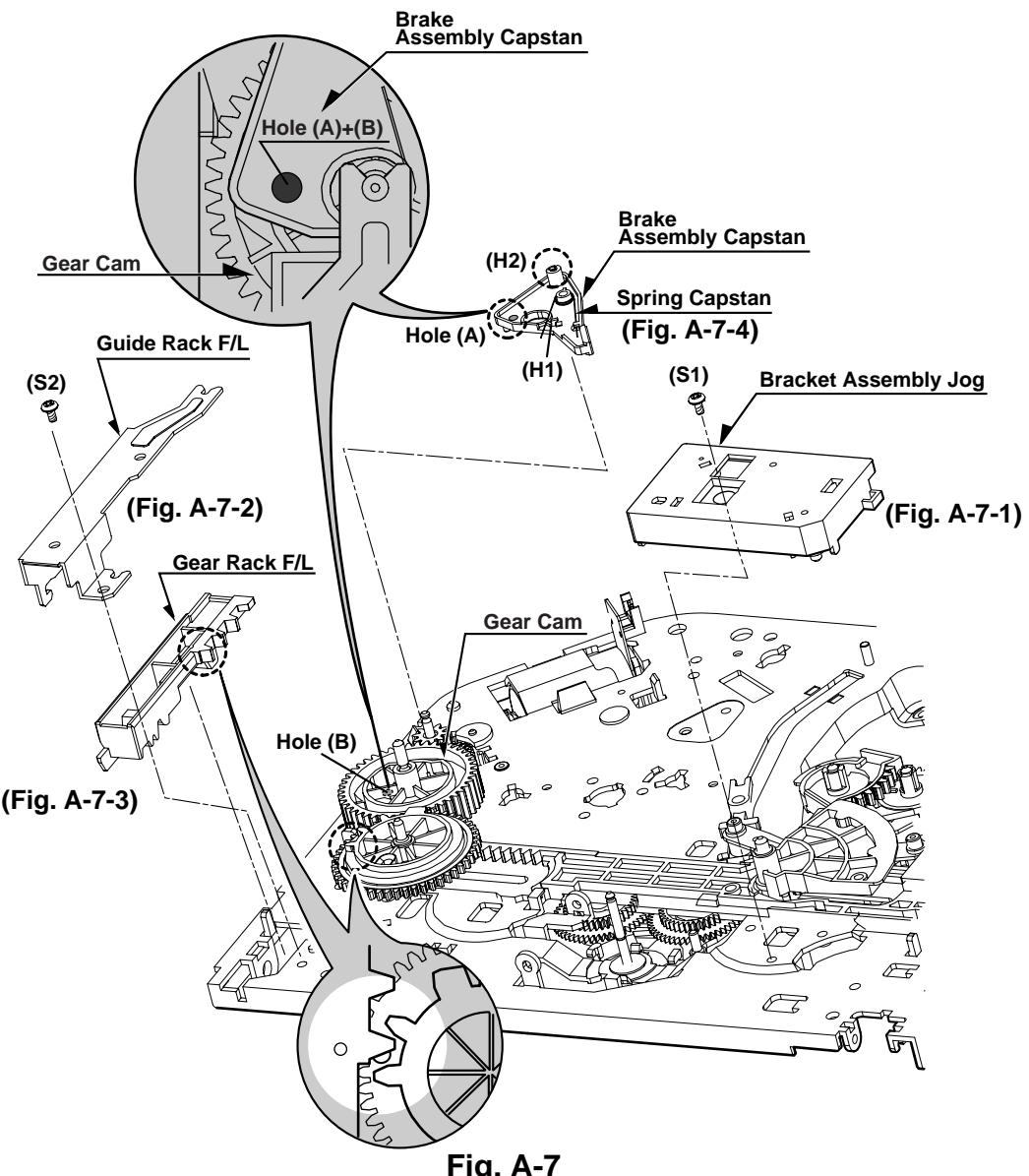


Fig. A-7

24. Bracket Assembly Jog (Fig. A-7-1)

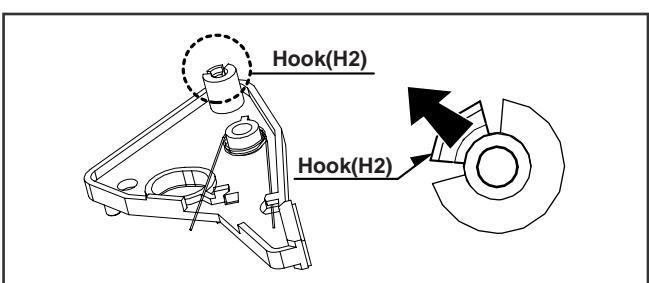
- 1) Remove the Screw(S1) and lift up the Bracket Assembly Jog.

25. Guide Rack F/L (Fig. A-7-2)/ Gear Rack F/L (Fig. A-7-3)

- 1) Remove the Screw(S2) and lift up the Guide Rack F/L.
- 2) Lift up the Gear Rack F/L.

26. Brake Assembly Capstan (Fig. A-7-4)

- 1) Hook the Spring Capstan on the Hook(H1).
- 2) Unhook the Hook(H2) and lift up the Brake Assembly Capstan.(Refer to Fig. to the right)



NOTE

- (1) When reassembling, confirm that the Hole(A) of the Brake Assembly Capstan is aligned to the Hole(B) of the Gear Cam.
(Refer to above Fig. A-7-4).

DECK MECHANISM DISASSEMBLY

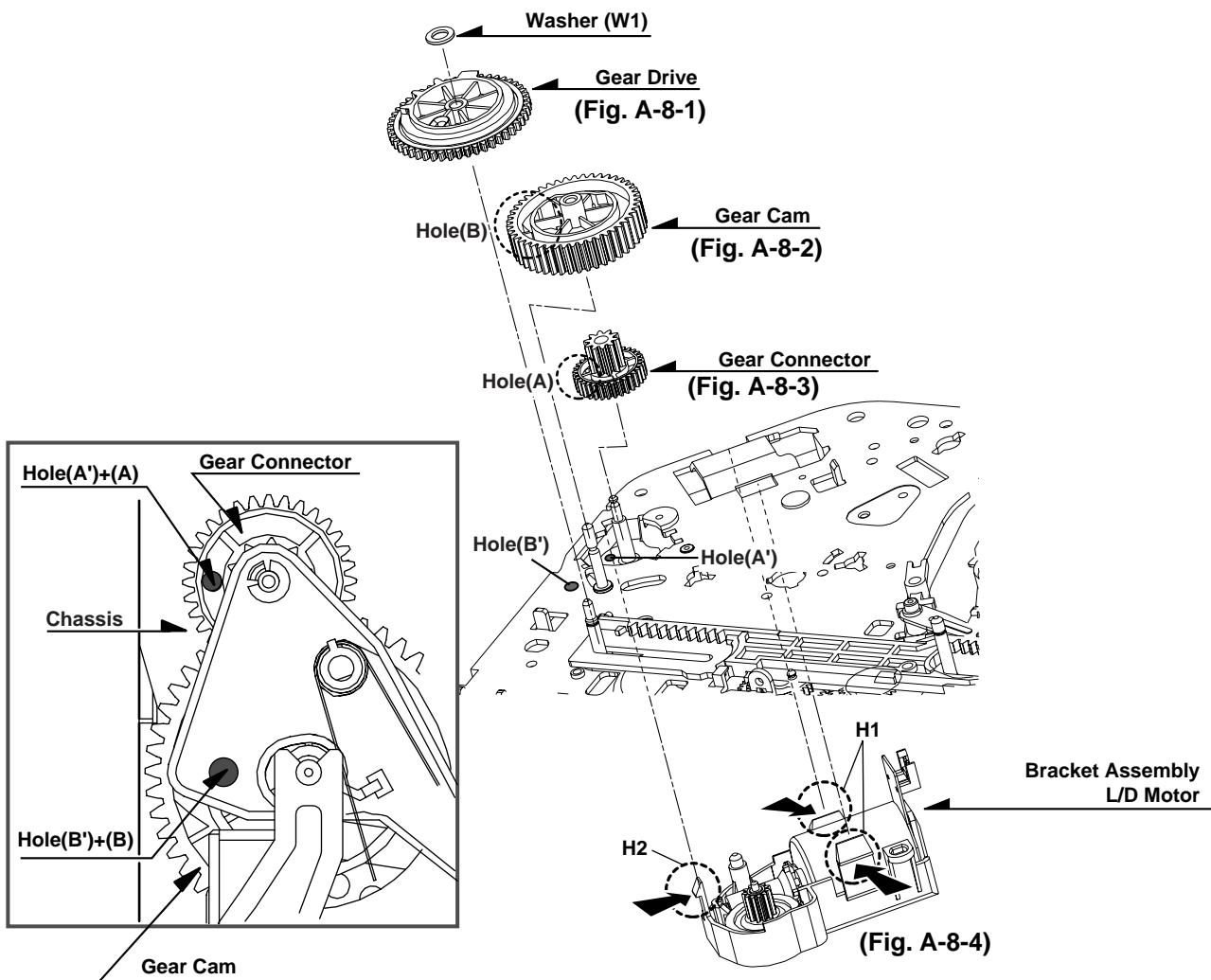


Fig. A-8

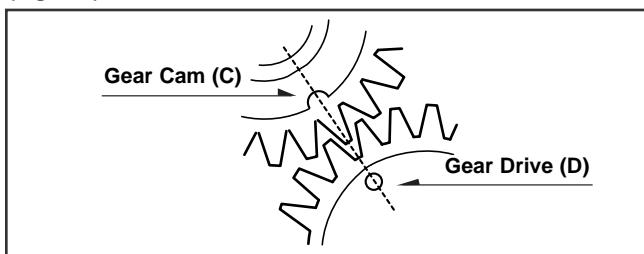
27. Gear Drive (Fig. A-8-1)/ Gear Cam (Fig. A-8-2)/ Gear Connector (Fig. A-8-3)

- 1) Remove the Washer(W1) and lift up the Gear Drive.
- 2) Lift up the Gear Cam.
- 3) Lift up the Gear Connector.

NOTE

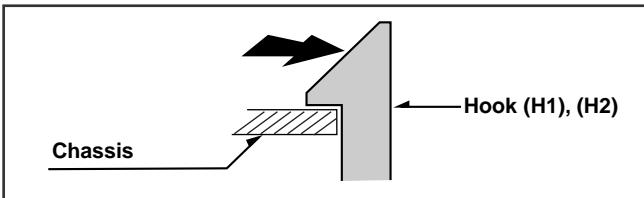
- (1) When reassembling, confirm that the Hole (A) of the Gear Connector is aligned to the Hole (A') of the Chassis (Fig. A-8-3).
- (2) When reassembling, confirm that the Hole (B) of the Gear Cam is aligned to the Hole (B') of the Chassis (Fig. A-8-2).
- (3) When reassembling, confirm that the (C) part of the Gear Cam is aligned to the (D) part of the Gear Drive as shown Fig. B-3

(Fig. B-3)



28. Bracket Assembly L/D Motor (Fig. A-8-4)

- 1) Unhook the three Hooks(H1),(H2) and push down the Bracket Assembly L/D Motor.



DECK MECHANISM DISASSEMBLY

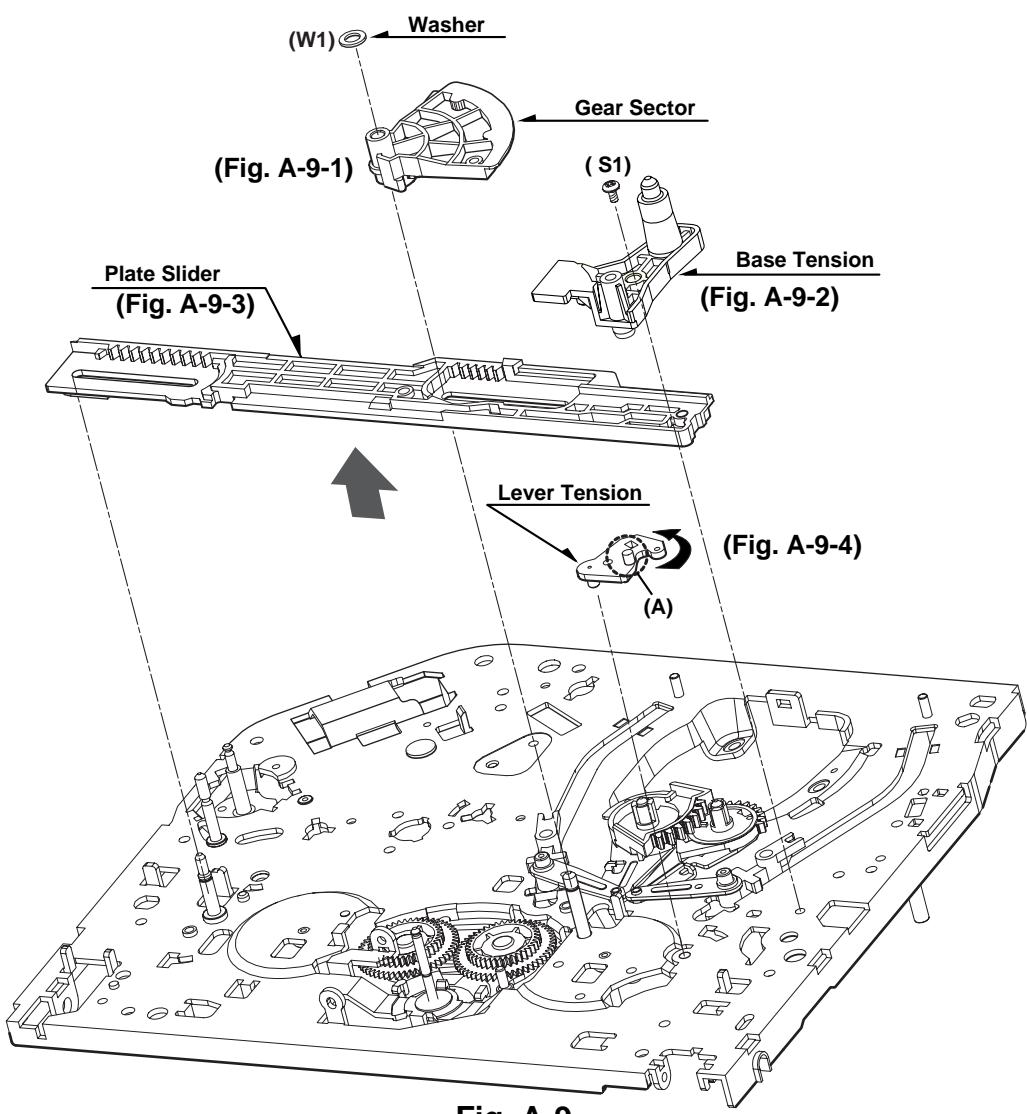


Fig. A-9

29. Gear Sector (Fig. A-9-1)

- 1) Remove the Washer(W1) and lift up the Gear Sector.

NOTE

30. Base Tension (Fig. A-9-2)/

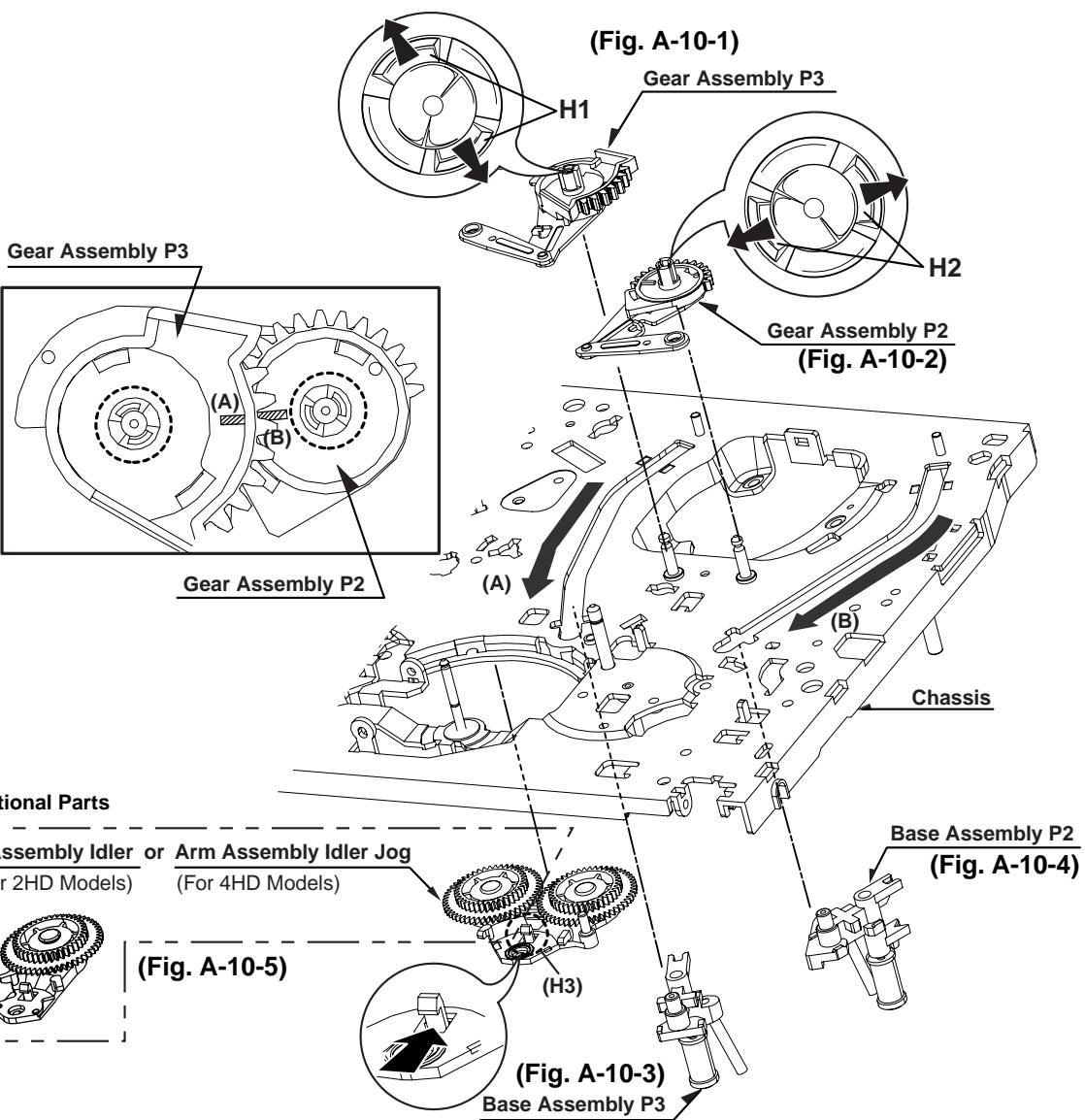
Plate Slider (Fig. A-9-3)/

Lever Tension (Fig. A-9-4)

- 1) Remove the Screw(S1) and lift up the Base Tension.
- 2) Lift up the Plate Slider.
- 3) Hold the (A) Part of the Lever Tension and turn to the counterclockwise direction, and then lift up the Lever Tension.

- (1) When reassembling, turn the Lever Tension to the clockwise direction in maximum.

DECK MECHANISM DISASSEMBLY



31. Gear Assembly P3 (Fig. A-10-1)

Gear Assembly P2 (Fig. A-10-2)

- 1) Unhook the two Hooks(H1) and lift up the Gear Assembly P3.
- 2) Unhook the two Hooks(H2) and lift up the Gear Assembly P2.

32. Base Assembly P3 (Fig. A-10-3)

Base Assembly P2 (Fig. A-10-4)

- 1) Move the Base Assembly P3 in the direction of the arrow of the Chassis Hole(A) and push down the Base Assembly P3.
- 2) Move the Base Assembly P2 in the direction of the arrow of the Chassis Hole(B) and push down the Base Assembly P2.

33. Arm Assembly Idler Jog or Arm Assembly Idler (Fig. A-10-5)

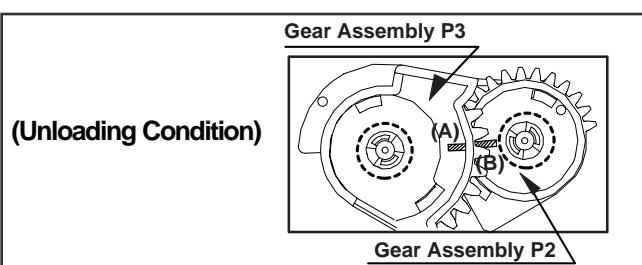
- 1) Unhook the Hook(H3) and push down the Arm Assembly Idler Jog.

NOTE

- 1) Arm Assembly Idler Jog is for 4HD Models.
- 2) Arm Assembly Idler is for 2HD Models.

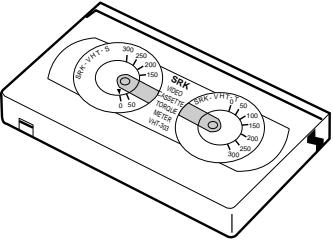
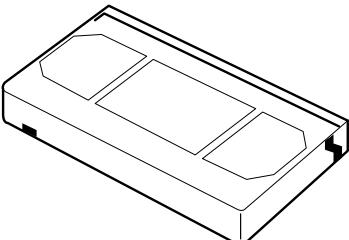
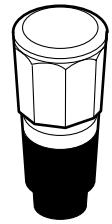
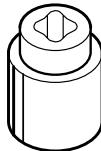
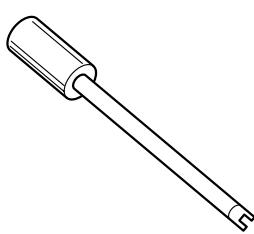
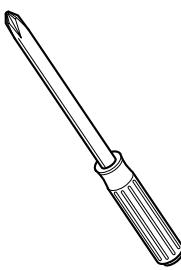
NOTE

- 1) When reassembling, confirm that the (A) Part of the Gear Assembly P3 is aligned to the (B) Part of the Gear Assembly P2 as shown below.



DECK MECHANISM ADJUSTMENT

• Tools and Fixtures for Service

<p>1. Cassette Torque meter SRK-VHT-303(Not SVC part)</p> 	<p>2. Alignment tape (See figure below)</p> 	<p>3. Torque gauge 600g.Cm ATG</p> 
<p>4. Torque gauge adaptor</p> 	<p>5. Post height adjusting driver Parts No: SV-TGO-030-000 (SMALL) SV-TGO-020-000 (LARGE)</p> 	<p>6. + Type driver (ø 5)</p> 

ALIGNMENT TAPES FOR ADJUSTMENT

Derivation No.	A	B	C	D
Mechanism	PAL	PAL	NTSC	NTSE
	SP/LP 2/4 Head	SP 2 Head	SP/LP/EP 2/4 Head	SP 2 Head
FM Envelope	TTV-P2L	TTV-P2	TTV-N1 (TTN-N12)	TTV-N2
A/C Head	Slantness	A commercially available tape		
	Height	TTV-P1 (TTV-P1L)	TTV-P1	TTV-N1 (TTV-N12) (TTV-N1E)
	Azimuth	TTV-P2	TTV-P2	TTV-N2
X-value	TTV-P2 (TTV-P2L)	TTV-P2	TTV-N2 TTV-N2E TTV-N12	TTV-N2
RG Post Inclination	A commercially available tape			
Tape Back Tension	SRK-VHT-303			

The numbers in () parenthesis can be used as the substitute.

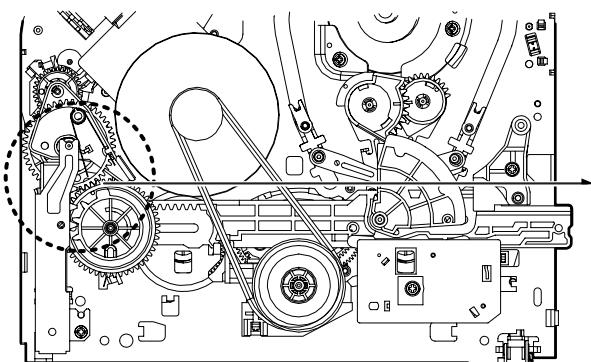
DECK MECHANISM ADJUSTMENT

1. Mechanism Alignment Position Check

Purpose: To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position
1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button. 2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2. 3) If not, rotate the Shaft of the Loading Motor to either Clockwise or Counterclockwise until the Alignment is as below Fig. C-2. 4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with		the Gear Drive as below Fig. C-1(A). 5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B). 6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM



BOTTOM VIEW

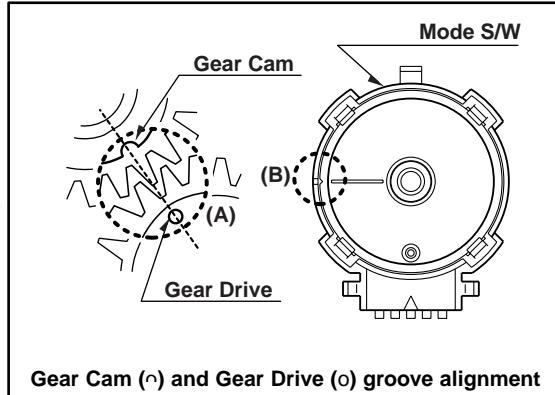
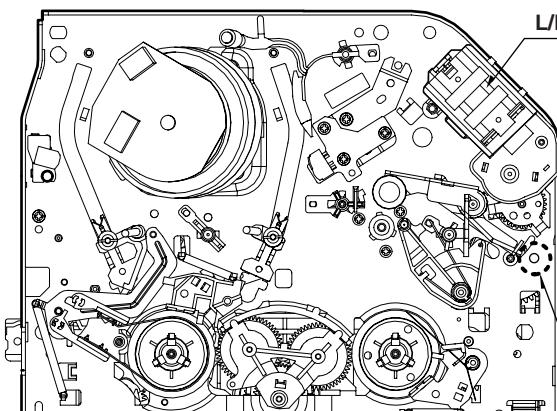


Fig. C-1



TOP VIEW

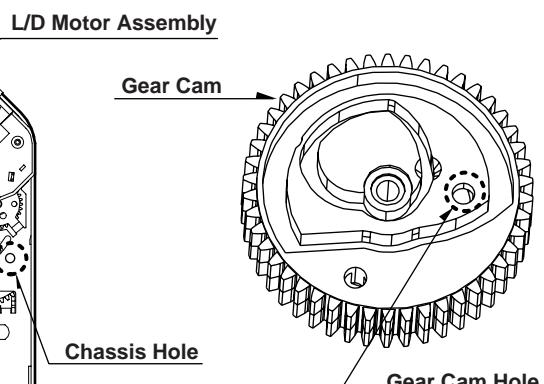


Fig. C-2

DECK MECHANISM ADJUSTMENT

2. Preparation for Adjustment (To set the Deck Mechanism to the Loading state without inserting a Cassette Tape).

- 1) Unplug the Power Cord from the AC Outlet.
- 2) Disassemble the Top Cover and Plate Assembly Top.
- 3) Plug the Power Cord into the AC Outlet.
- 4) Turn the Power SW on and push the Lever Stopper (L),(R) of the Holder Assembly CST to the back for Loading the Cassette without

Tape.

Cover the Holes of the End Sensors at the both sides of the Bracket Side(L) and Bracket Assembly Door to prevent a light leak.

Then The Deck Mechanism drives to the Stop Mode.

In this case, The Deck Mechanism can accept inputs of each mode, however the Rewind and Review Operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth Transport of the Tape during each Mode of Operation.

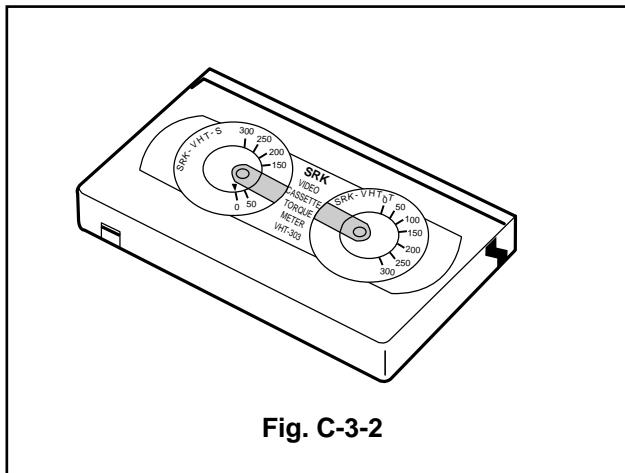
If the Tape Transport is abnormal, then check the Torque as indicated by the chart below.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Checking Method		
<ul style="list-style-type: none"> • Torque Gauge(600g/cm ATG) • Torque Gauge Adaptor • Cassette Torque Meter SRK-VHT-303 	<ul style="list-style-type: none"> • Play (FF) or Review (REW) Mode 	<ul style="list-style-type: none"> • Perform each Deck Mechanism Mode without inserting a Cassette Tape(Refer to above No.2 Preparation for Adjustment). • Read the Measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2). • Attach the Torque Gauge Adaptor to the Torque Gauge and then read the Value of it(Fig. C-3-1). 		
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	75~115g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	130~200g/m

NOTE:

The Values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

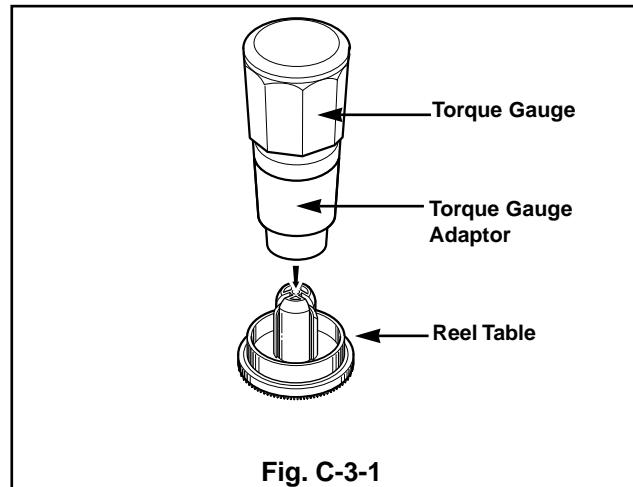
• Cassette Torque Meter (SRK-VHT-303)



NOTE:

The Torque reading to measure occurs when the Tape abruptly changes direction from Fast Forward or Rewind Mode, when quick bracking is applied to both Reels.

• Torque Gauge (600g.cm ATG)



DECK MECHANISM ADJUSTMENT

4. Guide Roller Height Adjustment

Purpose: To regulate the Height of the Tape so that the Bottom of the Tape runs along the Tape Guide Line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

- 1) Confirm if the Tape runs along the Tape Guide Line of the Lower Drum.
- 2) If the Tape runs the Bottom of the Guide Line, turn the Guide Roller Height Adjustment Screw to Clockwise direction.
- 3) If it runs the Top, turn to Counterclockwise direction.
- 4) Adjust the Height of the Guide Roller to be guided to the Guide Line of the Lower Drum from the Starting and Ending Point of the Drum.

ADJUSTMENT DIAGRAM

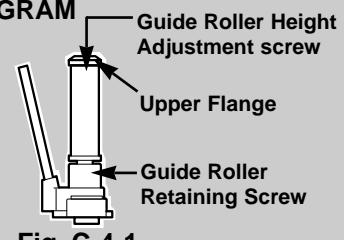


Fig. C-4-1

4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

Adjustment Procedure

- 1) Play an Alignment Tape after connecting the Probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.
- 2) Tracking Control(in PB Mode) : Center Position(When this Adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).
- 3) Height Adjustment Screw : Flatten the RF Waveform. (Fig. C-4-2)
- 4) Turn(Move) the Tracking Control(in PB Mode) Clockwise and Counterclockwise.(Fig. C-4-3)
- 5) Check that any Drop of RF Output is uniform at the Start and End of the Waveform.

Waveform Diagrams

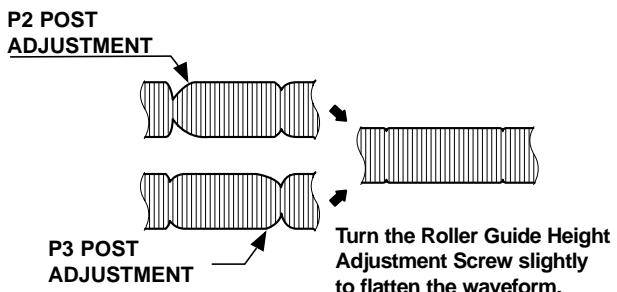


Fig. C-4-2

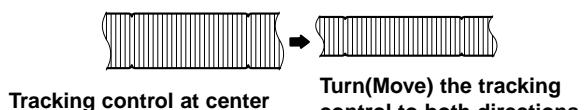
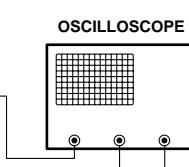


Fig. C-4-3

Connection Diagram

RF ENVELOPE OUTPUT TEST POINT
HEAD SWITCHING OUTPUT TEST POINT



NOTE

If the adjustment is excessive or insufficient the tape will jam or fold.

DECK MECHANISM ADJUSTMENT

5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the Tape passes accurately over the Audio and Control Tracks in exact Alignment in both the Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> • Blank Tape • Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> • Play the blank tape 	<ul style="list-style-type: none"> • Tilt Adjustment Screw(C) • Height Adjustment Screw(B) • Azimuth Adjustment Screw(A)

Adjustment Procedure/Diagrams

- 1) Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
- 2) Play a Blank Tape and observe if the Tape passes accurately over the A/C Head without Tape Curling or Folding.
- 3) If Folding or Curling is occurred then adjust the Tilt Adjustment Screw(C) while the Tape is running to resemble Fig. C-5-3.

- 4) Reconfirm the Tape Path after Playback about 4~5 seconds.

NOTE

Ideal A/C head height occurs, when the tape runs between 0.2~0.25mm above the bottom edge of the A/C head core.

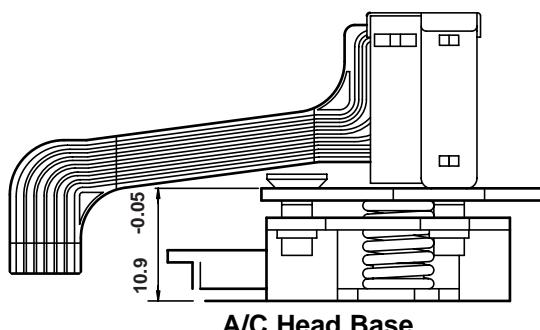


Fig. C-5-1

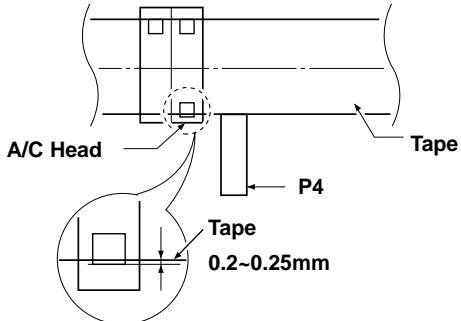
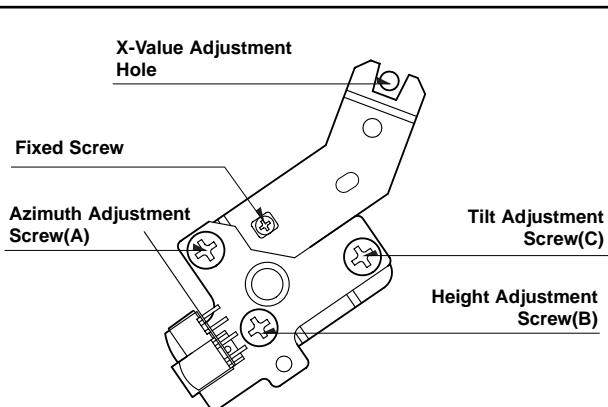


Fig. C-5-3



A/C Head Assembly

Fig. C-5-2

DECK MECHANISM ADJUSTMENT

5-2. Confirm that the Tape passes smoothly between the Take-up Guide and Pinch Roller(using a Mirror or the naked eye).

- After completing Step 5-1.(Preliminary Adjustment), check that the Tape passes around the Take-up Guide and Pinch Roller without Folding or Curling at the Top or Bottom.
 - If Folding or Curling is observed at the Bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the Clockwise direction.
 - If Folding or Curling is observed at the Top of it then

slowly turn the Tilt Adjustment Screw(C) in the Counterclockwise direction.

NOTE:

Check the RF Envelope after adjusting the A/C Head, if the RF Waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF Waveform.

5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> Oscilloscope Alignment Tape(SP) Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> Audio output jack 	<ul style="list-style-type: none"> Play an Alignment Tape 1KHz, 7KHz Sections 	<ul style="list-style-type: none"> Azimuth Adjustment Screw(A) Height Adjustment Screw(B)
Adjustment Procedure			
<ol style="list-style-type: none"> Connect the Probe of the Oscilloscope to Audio Output Jack. Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for Maximum Output of the 1Khz and 7Khz segments, while maintaining the flattest Envelope differential between the two Frequencies. 			

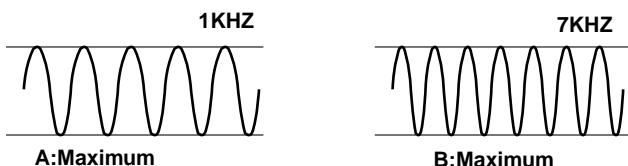


Fig. C-5-4

6. X-Value Adjustment

Purpose: To obtain compatibility with other VCR(VCP) Models.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> Oscilloscope Alignment tape(SP only) Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> CH-1: PB RF Envelope CH-2: NTSC: SW 30Hz PAL: SW 25Hz Head Switching Output Test Point RF Envelope Output Test Point 	<ul style="list-style-type: none"> Play an Alignment Tape 	
Adjustment Procedure		Adjustment Diagram	
<ol style="list-style-type: none"> Release the Automatic Tracking to run long enough for Tracking to complete its Cycle. Tracking center position. Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the Diagram to find the center of the peak that allows for the maximum Waveform Envelope. This method should allow the 31um Head to be centrally located over the 58um Tape Track. Tighten the Base Assembly A/C Head mounting Screw. 			
		Connection Diagram	

DECK MECHANISM ADJUSTMENT

7. Adjustment after Replacing Drum Assembly (Video Heads)

Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
<ul style="list-style-type: none"> • Oscilloscope • Alignment tapes • Blank Tape • Post Height Adjusting Driver • Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> • CH-1: PB RF Envelope • CH-2: NTSC: SW 30Hz PAL: SW 25Hz • Head Swithching Output Test Point • RF Envelope Output Test Point 	<ul style="list-style-type: none"> • Play the blank tape • Play an alignment tape 	<ul style="list-style-type: none"> • Guide Roller Precise Adjustment • Switching Point • Tracking Preset • X-Value
Checking/Adjustment Procedure		<p>Play a blank tape and check for tape curling or creasing around the roller guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".</p>	
		<p>Connection Diagram</p> <p>Waveform</p> <p>V1/V MAX \leq 0.7 V2/V MAX \leq 0.8 RF ENVELOPE OUTPUT</p>	<p>OSCILLOSCOPE</p> <p>RF ENVELOPE OUTPUT TEST POINT</p> <p>HEAD SWITCHING OUTPUT TEST POINT</p> <p>V1</p> <p>V2</p> <p>Fig. C-7</p>

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1. Check Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> • Oscilloscope • Alignment tapes(with 6H 3kHz Color Bar Signal) • Stop Watch 	<ul style="list-style-type: none"> • RF Locking Time: Less than 5 sec. • Audio Locking Time: Less than 10sec 	<ul style="list-style-type: none"> • CH-1: PB RF Envelope • CH-2: Audio Output • RF Envelope Output Point • Audio Output Jack 	<ul style="list-style-type: none"> • Play an alignment tape (with 6H 3kHz Color Bar Signal)
Checking Procedure		<p>NOTES:</p> <ol style="list-style-type: none"> 1) CUE is fast forward mode (FF) 2) REV is the rewind mode (REW) 3) Referenced to the Play mode 	

8-2. Check for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> • T-160 Tape • T-120 Tape 	<ul style="list-style-type: none"> • Be sure there is no tape jamming or curling at the begining, middle or end of the tape. 	<ul style="list-style-type: none"> • Run the CUE, REV play mode at the beginning and the end of the tape.
Checking Procedure		<ol style="list-style-type: none"> 1) Confirm that the tape runs smoothly around the roller guides, drum and A/C head assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the begining, middle and end sections of the cassette. 2) Confirm that the tape passes over the A/C head assembly as indicated by proper audio reproduction and proper tape counter performance.

MAINTENANCE/INSPECTION PROCEDURE

1 Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replace- ment
Color beats	Dirt on full-erase head	o
Poor S/N, no color	Dirt on video head	o
Vertical or Horizontal jitter	Dirt on video head Dirt on tape transport system	o
Low volume, Sound distorted	Dirt on Audio/control head	o
Tape does not run. Tape is slack	Dirt on pinch roller	o
In Review and Unloading (off mode), the Tape is rolled up loosely.	Clutch Ass'y S27 Torque reduced Cleaning Drum and transport system	o Fig. C-9-3

NOTE

If locations marked with **o** do not operate normally after cleaning, check for wear and replace.

See the EXPLODED VIEWS at the end of this manual as well as the above illustrations. See the Greasing (Page 4-22) for the sections to be lubricated and greased.

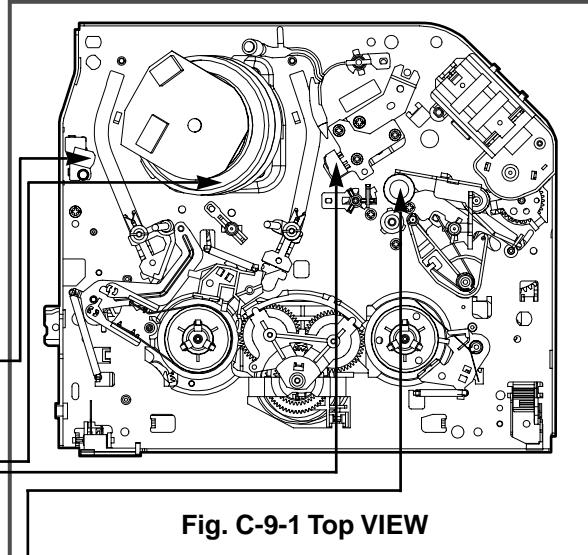


Fig. C-9-1 Top VIEW

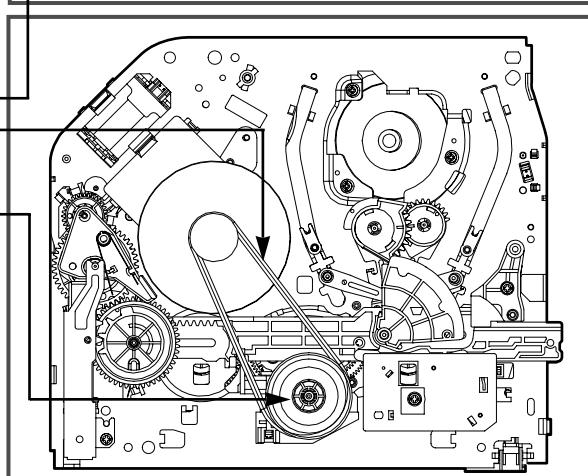


Fig. C-9-2 BOTTOM VIEW

* No. (1)~(13) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

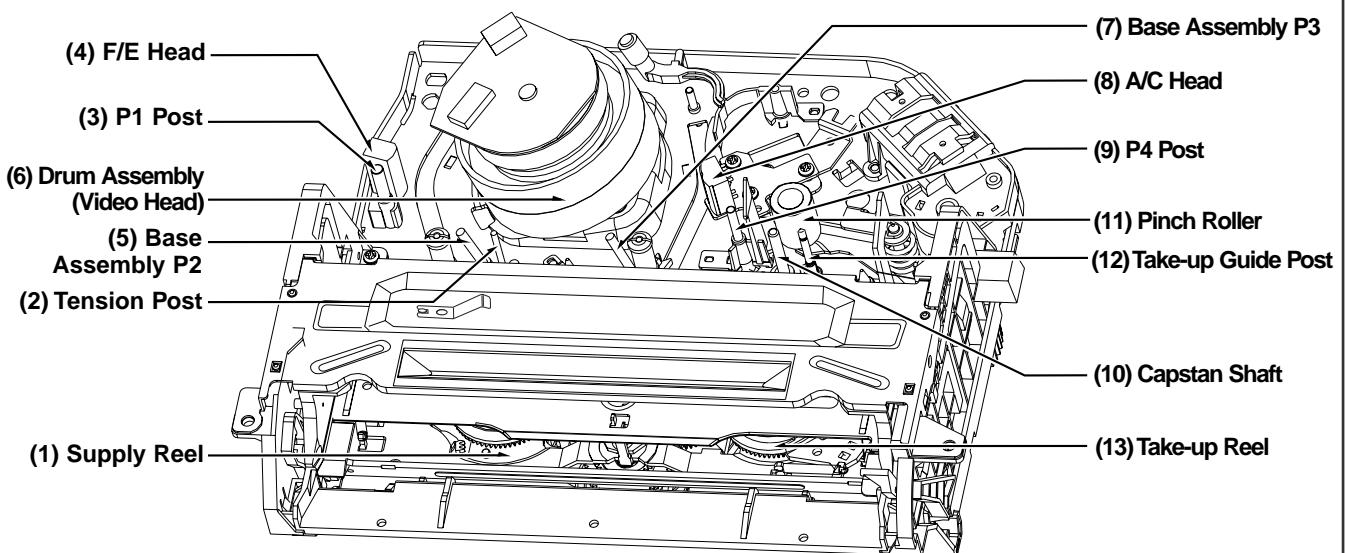


Fig. C-9-3 Tape Transport System

MAINTENANCE/INSPECTION PROCEDURE

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.

But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary	About 1 year	About 18 months	About 3 years
Average hours used per day			
One hour			
Two hours			
Three hours			

4. Supplies Required for Inspection and Maintenance

- (1) Grease : Kanto G-311G (Blue) or equivalent
- (2) Isopropyl Alcohol or equivalent
- (3) Cleaning Patches
- (4) Grease : Kanto G-381(Yellow) : Used only for Reel S and Reel T

5) Maintenance Procedure

5-1) Cleaning

(1) Cleaning video head

First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.

- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no that force is that would cause deforming or damage applied to the system.

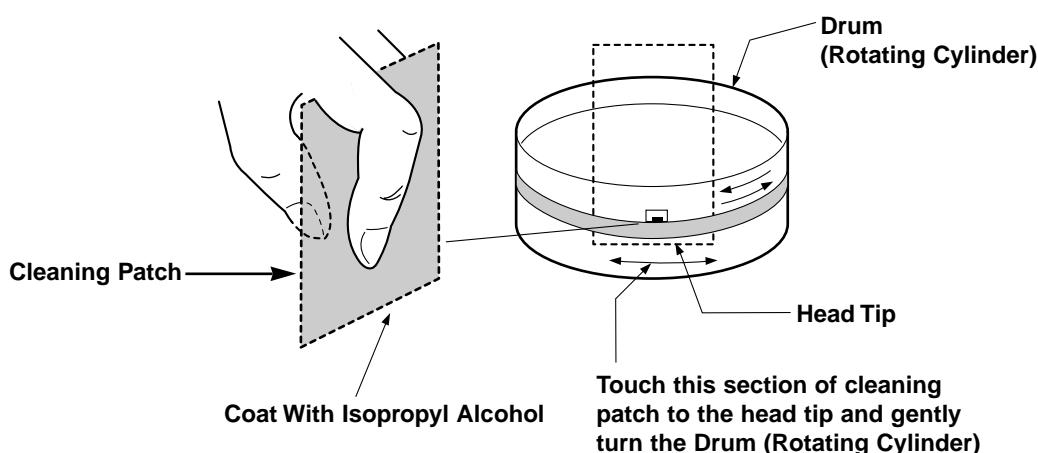


Fig. C-9-4

MAINTENANCE/INSPECTION PROCEDURE

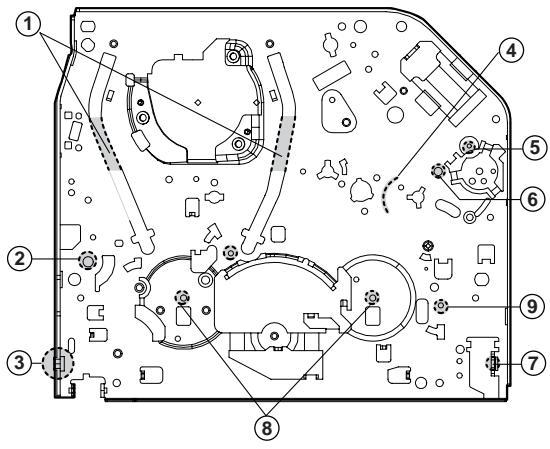
5-2) Greasing

(1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with cleaning patch wetted in Isopropyl Alcohol.

NOTE:Greasing Points

1) Loading Path Inside & Top side	6) Shaft
2) Base Tension Boss inside Hole	7) Arm Assembly F/L of Buming Inside Hole
3) Arm Assembly F/L "U" Groove	8) Reel S, T Shaft (G381:Yellow)
4) Arm Take-up Rubbing Section	9) Brake T Groove
5) L/D Motor Worm Wheel Part	

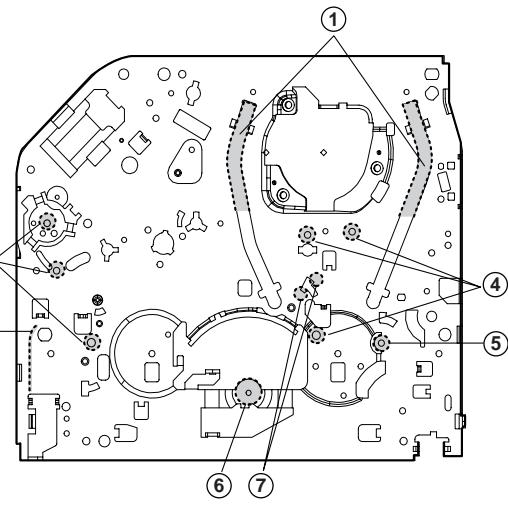


Chassis (Top)

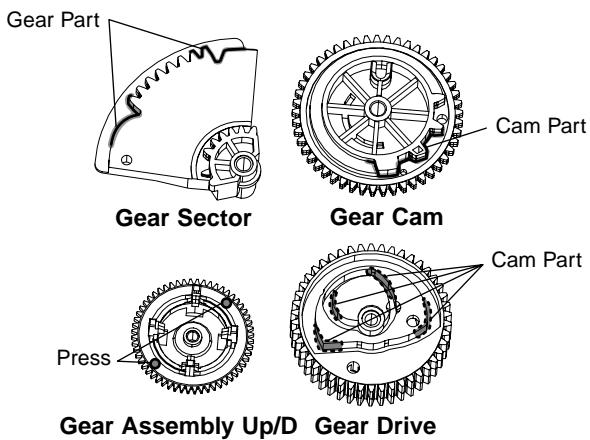
(2) Periodic greasing

Grease specified locations every 5,000 hours.

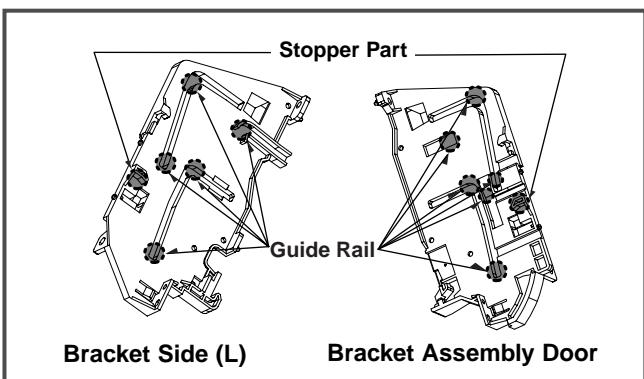
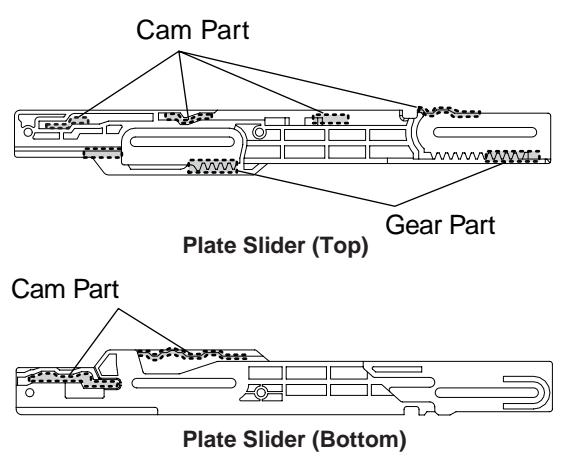
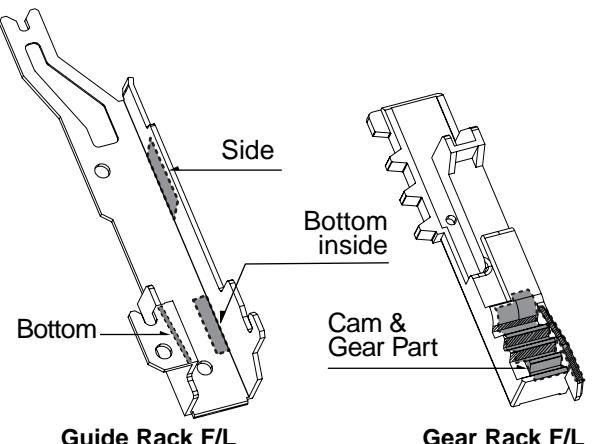
1) Loading Path Inside & Top side	5) Lever Tension Groove
2) Shaft	6) Clutch Assembly D33 Shaft
3) Gear Rack F/L Moving Section	7) Brake "S" Rubbing Section
4) Shaft	



Chassis (Bottom)



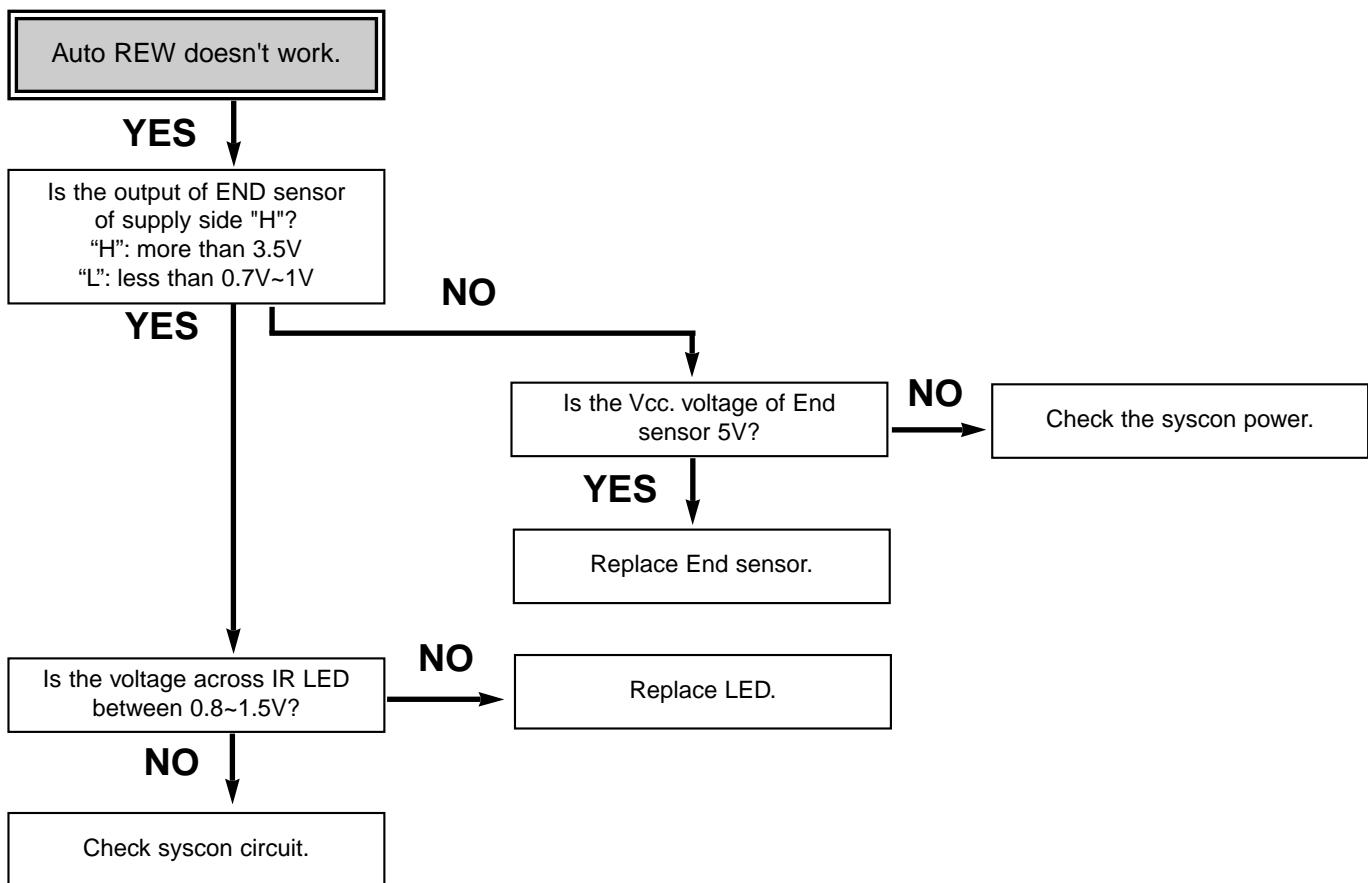
Gear Assembly Up/D Gear Drive



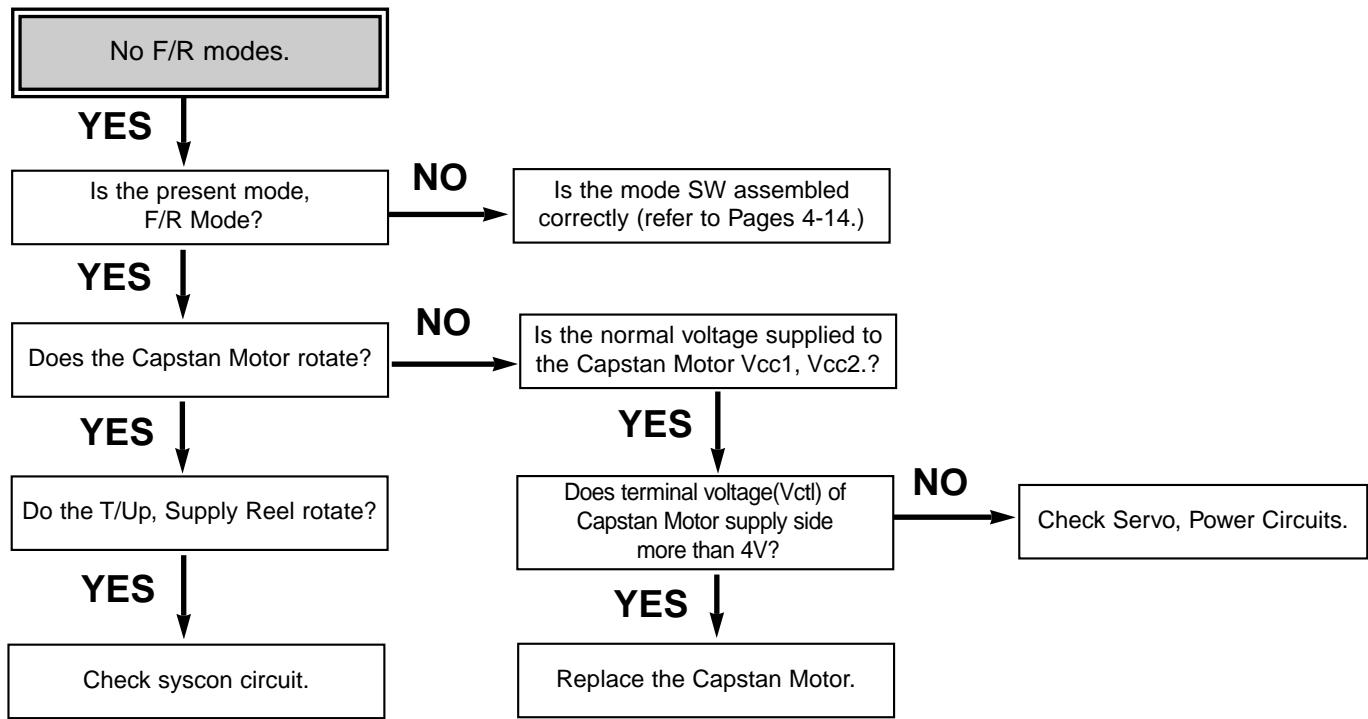
MECHANISM TROUBLESHOOTING GUIDE

1. Deck Mechanism

A.

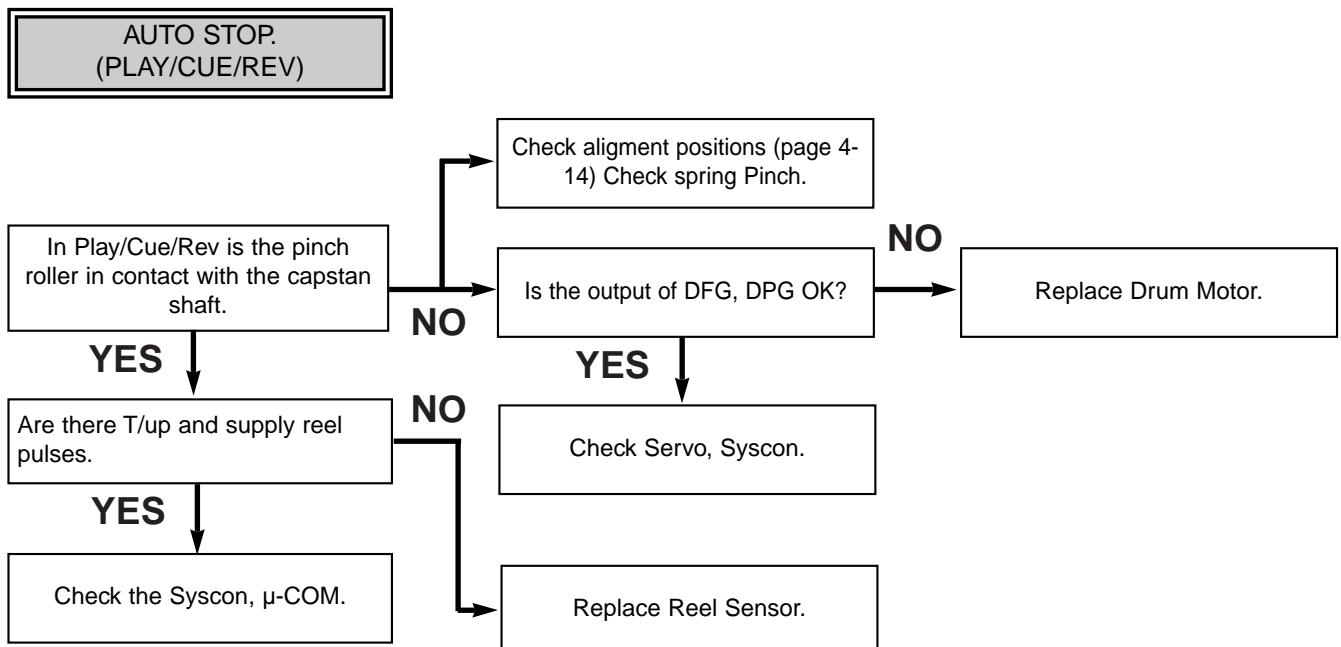


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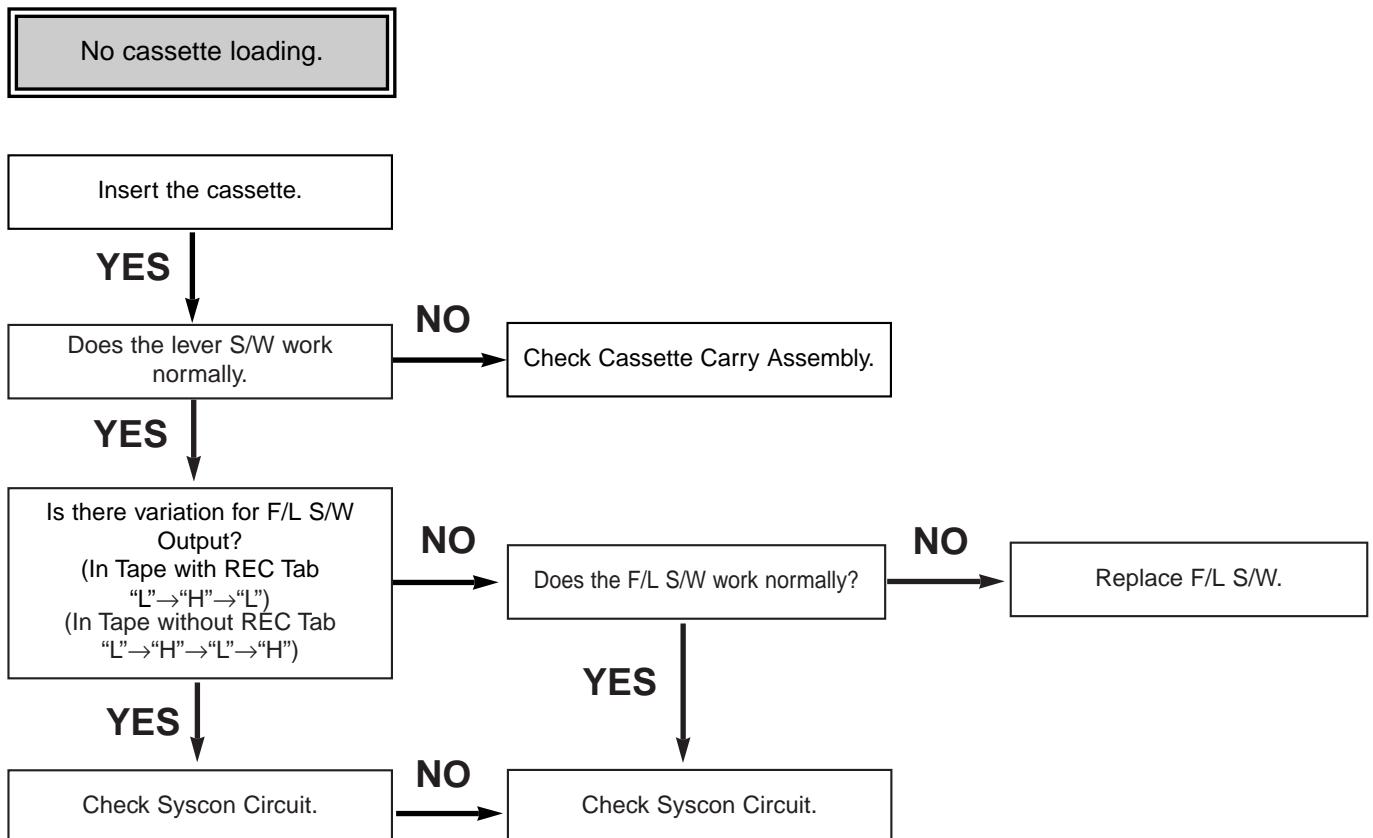


MECHANISM TROUBLESHOOTING GUIDE

C.

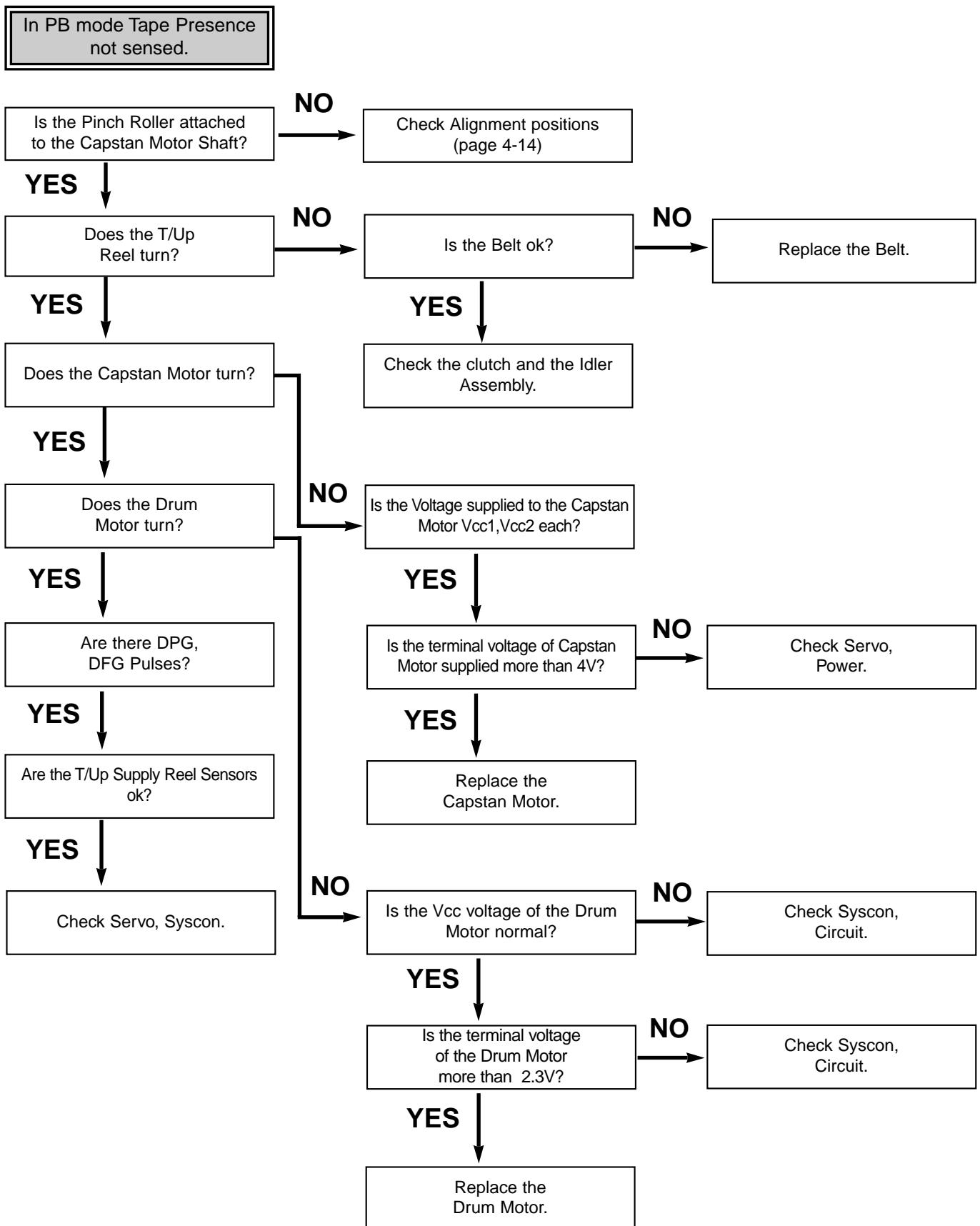


D.



MECHANISM TROUBLESHOOTING GUIDE

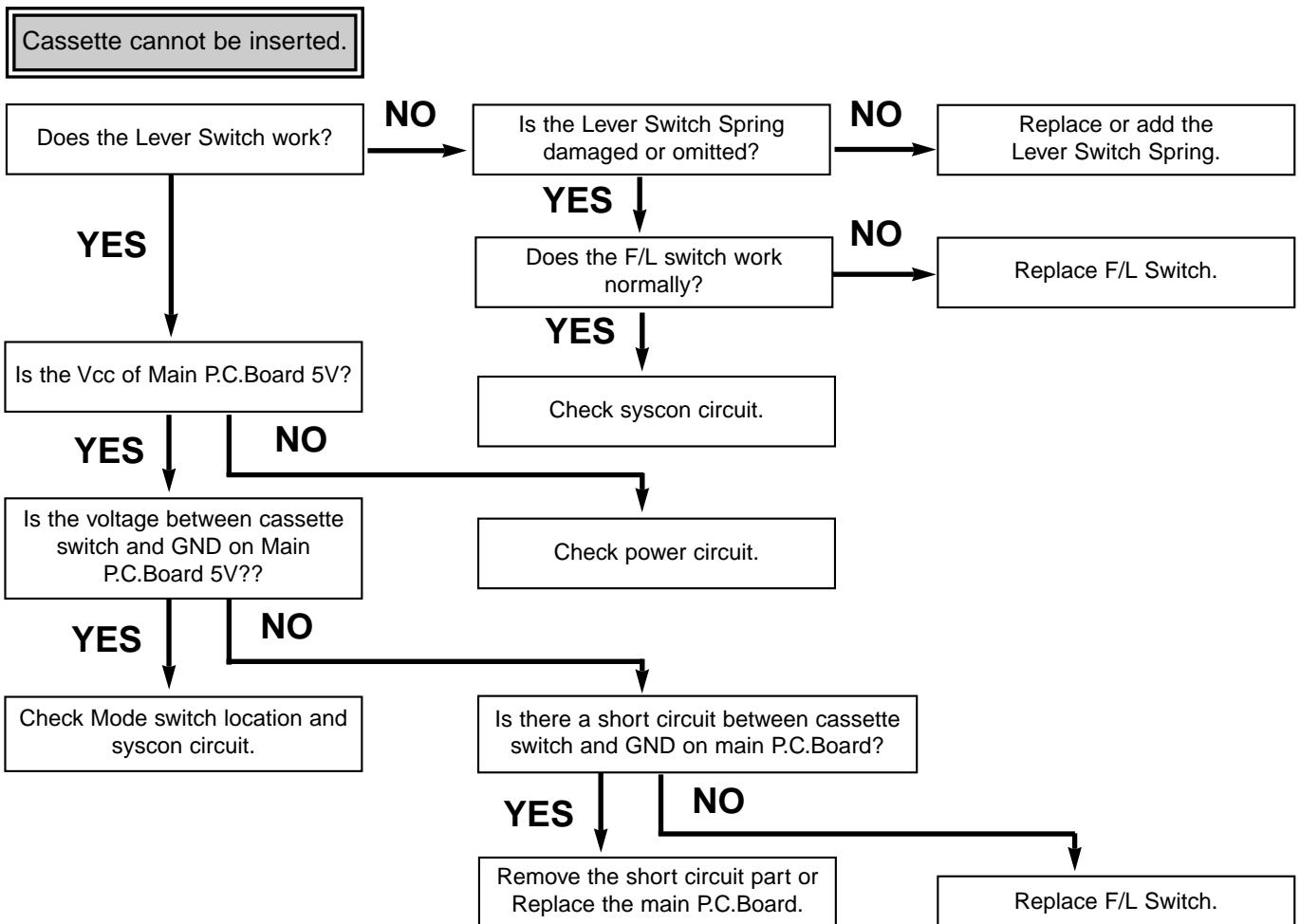
E.



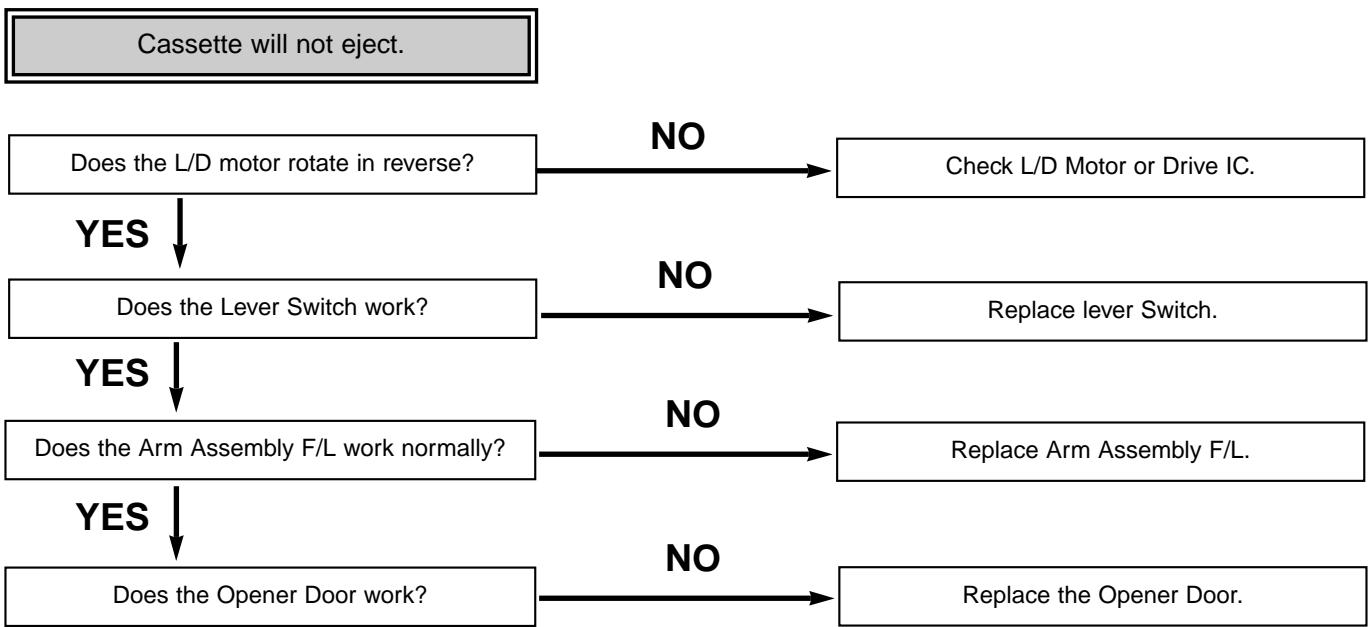
MECHANISM TROUBLESHOOTING GUIDE

2. Front Loading Mechanism

A.

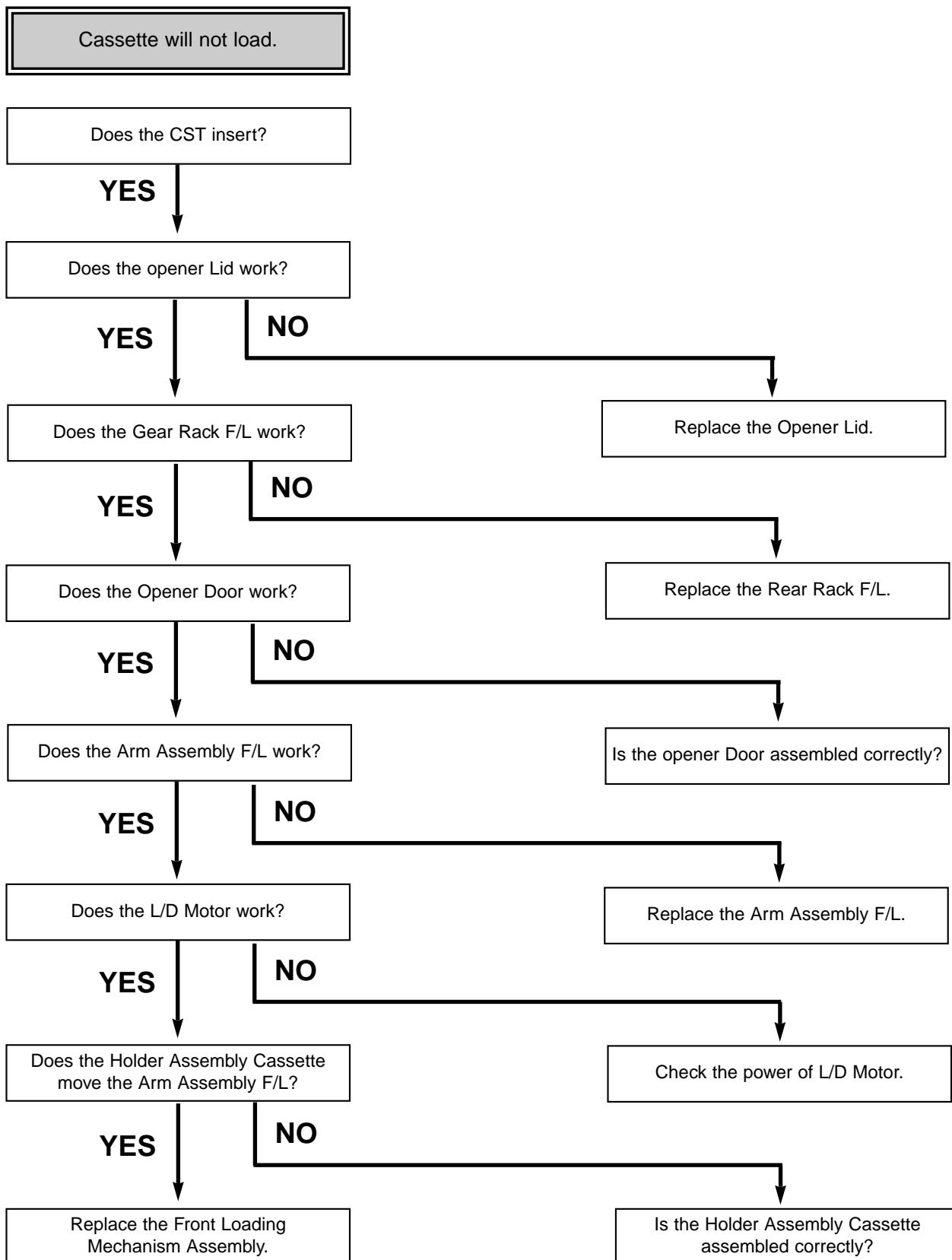


B.



MECHANISM TROUBLESHOOTING GUIDE

C.



サービス技術ニュース	
番号	連絡内容
G— —	
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